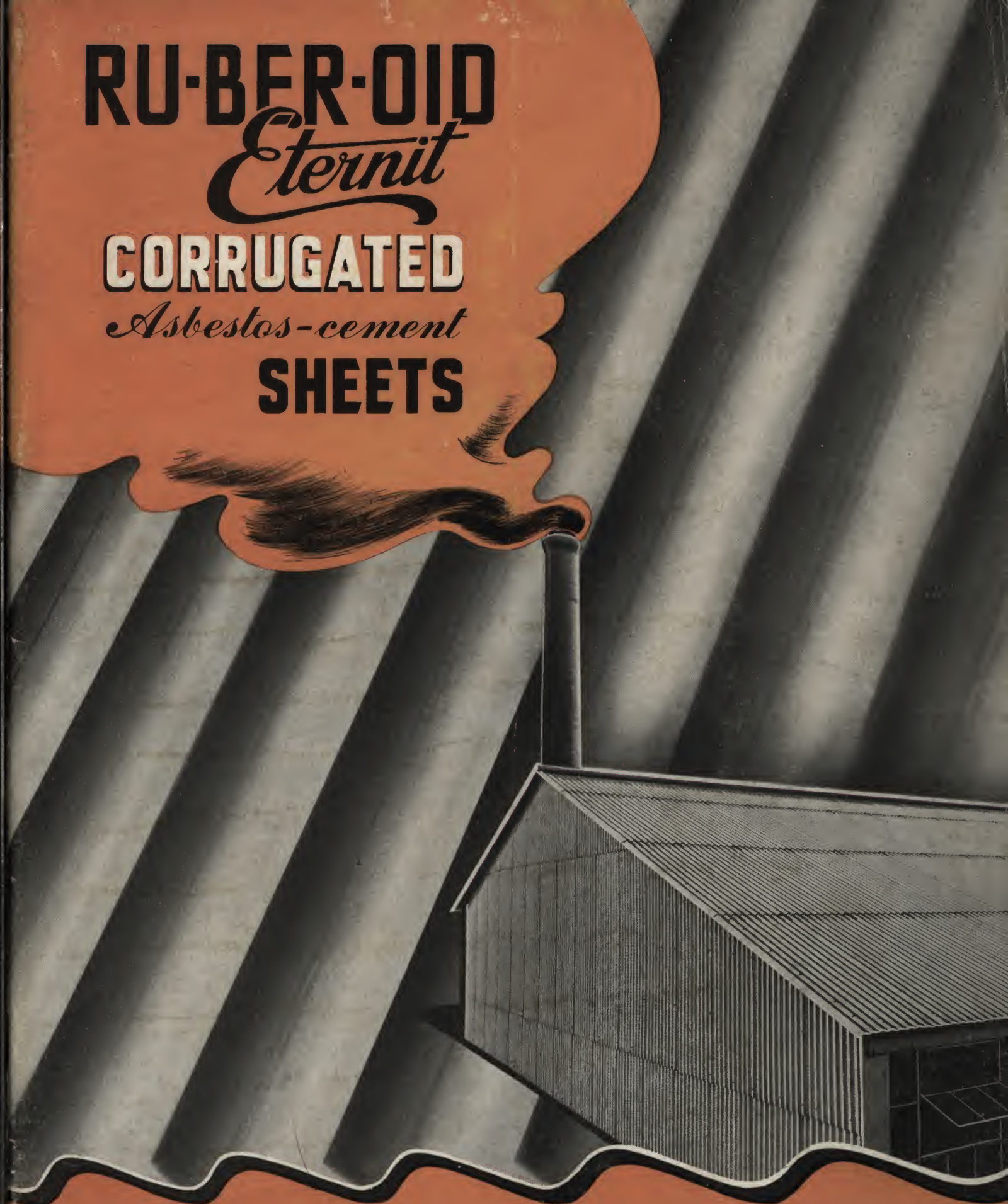
RU-BER-OID *Eternit*

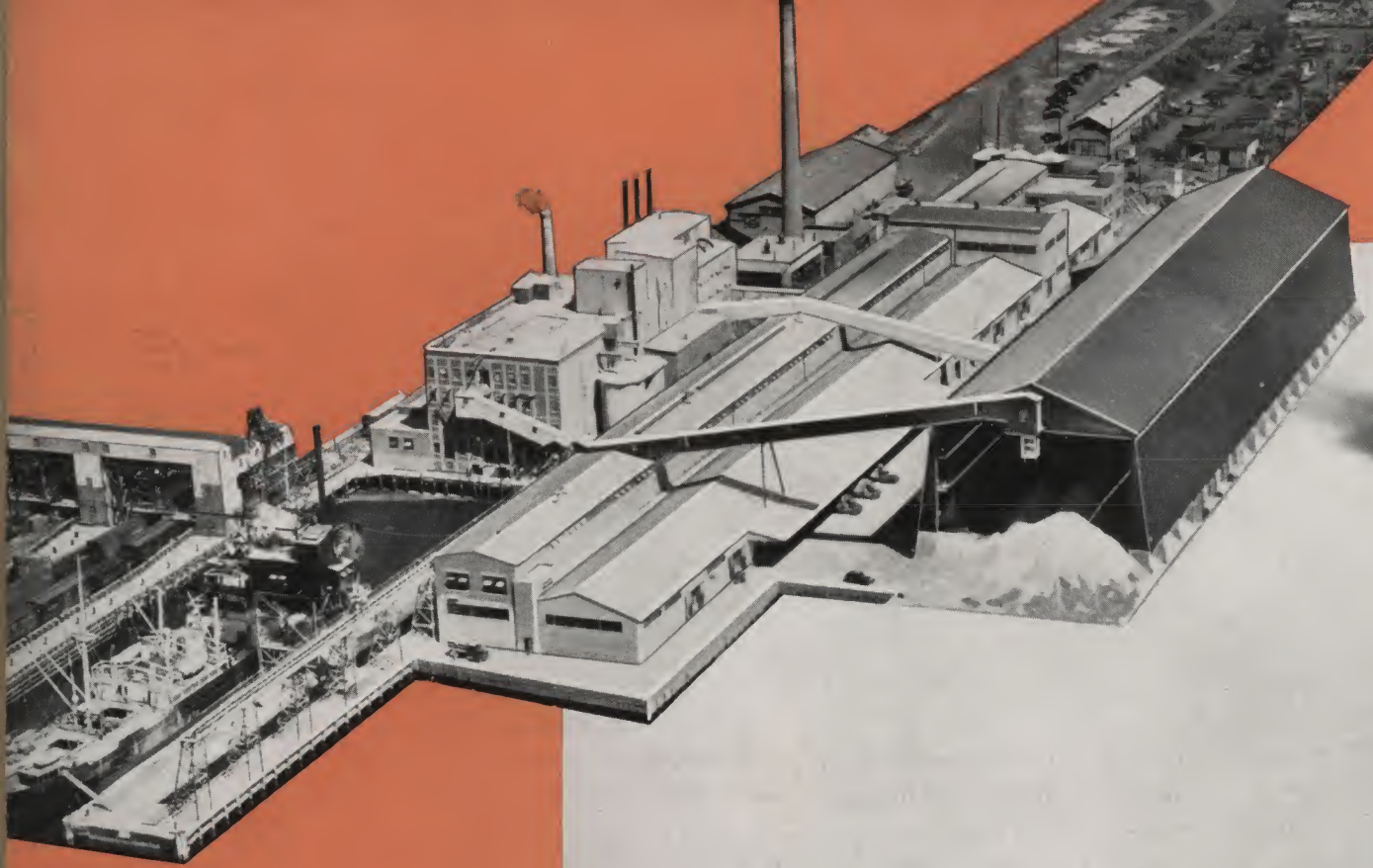
CORRUGATED

Asbestos-cement

SHEETS



for FIREPROOF PERMANENT CONSTRUCTION



Aerial view of plant where gypsum is manufactured. Corrugated Eternit Sheets used on roofs and sidewalls.

Corrugated Eternit Sheets were used on sidewall of this large power plant.

WHEN a modern industrial plant selects a building material, they require it to have certain essential characteristics. It must be composed of materials which cannot burn, being absolutely fireproof and able to withstand high temperatures thus preventing the spread of fires. It should be permanent, not affected by weather. It must be resistant to corrosion when used in damp places, on chemical buildings, or in contact with chimney gases. It should be easily worked with standard tools. It should present a neat, clean and attractive appearance. The initial cost may be moderate, but in order to be truly an economical material, it must require no maintenance, even after years of service. The initial cost should be the final cost. The material should be relatively light in weight so that the supporting steel structure may be economically designed.

The one ideal building material which will provide all these very desirable features in a single product is Ruberoid Corrugated Eternit Asbestos Sheets.

What Are RU-BER-OID CORRUGATED ETERNIT Asbestos Sheets?

Corrugated Eternit Sheets provide a strong permanent and fireproof building material by virtue of the raw material used in their composition and the manner by which the sheets are constructed. Combining Asbestos Fibres and Portland cement, both inorganic substances, a rock-like sheet of high tensile strength is formed.

Asbestos, derived from the Greek word meaning "unquenchable," "inconsumable," is a mineral rock, mined from the earth, from which silky fibres can be extracted which possess remarkable strength. It has remained in its original state throughout the ages, is indestructible and chemically inert.

Brick, Stone, Corrugated Eternit Sheets and Glass were all employed in this airplane hanger.

Portland cement made chiefly from limestone rock is widely used for construction work because it is not affected by the elements and because it possesses the peculiar property of growing stronger with age.

It is not sufficient, however, to simply combine these two natural non-burning raw materials to make a satisfactory building material; it requires the proper highly scientific equipment to assure that the maximum strength and other necessary qualities are obtained. Asbestos fibres are included in the mixture to increase tensile strength. They function with Portland cement in the same manner as iron bars reinforce concrete. In the same way as these iron bars are placed in a parallel position with the surface, so are the asbestos fibres laid into Corrugated Eternit Sheets by the forming machines which were specially designed by The Ruberoid Co.

In addition to the strength secured from two of nature's very valuable products and the manner in which they are combined, the corrugations provide increased strength that permits the material to be used safely over skeleton construction. These corrugations are formed while the sheet is being built up to its required thickness on corrugated rolls. The cement and asbestos is accumulated on these rolls in many thin layers to make the asbestos fibres lie flat in the plane of the sheet . . . and the result is a homogeneous, non-laminated product with the strongest fibre reinforcing. The corrugation of one sheet lapping over the corrugation of its adjacent sheet prevents water from seeping through the joints and provides a weather-resistant building in all climates.

Corrugated Eternit Sheets because of the nature of the materials from which they are made, plus the skill with which these materials are combined, possess qualities which make them an ideal material for use on both the roofs and sidewalls of industrial and other buildings.

• FIREPROOF

Modern industry demands the use of fireproof structures. Due to the concentration of buildings in large plants, it is particularly essential that the roofing and siding materials be fireproof.

This protection against the ravages of fire is of paramount importance in plants where the product manufactured or refined is of an inflammable character.

Because they are made of two materials which cannot burn—Portland cement and asbestos fibres, Corrugated Eternit Sheets are fireproof. Furthermore because they are able to withstand high temperatures without warping or buckling they guard against the spread of fire.

Oil and chemical companies, where fire is a distinct hazard, use large quantities of Eternit Sheets.

• CORROSION PROOF

Industrial buildings are subject to two types of corrosive action — the corrosive action of the elements, present in any plant — and the action of chemical fumes present in the atmosphere in many industrial centers.

Corrugated Eternit sheets, due to their mineral composition, withstand the natural corrosive action of the elements. They will not rot, rust, corrode, warp or buckle. Eternit sheets are also resistant to smoke, flue gases or chemical fumes.

• WEATHERPROOF

Any roofing or siding material is expected to keep out moisture but its true value is dependent upon how long it will give this protection without deteriorating.

Corrugated Eternit Sheets will withstand heavy rains, rapid changes in temperature, humid atmosphere and salty air — indefinitely.

Salt air has no effect on Corrugated Eternit Sheets. These bath houses were built for permanence of durable fireproof materials.

• INSULATING QUALITY

While Corrugated Eternit Sheets are not sold as an insulating product the light gray color tends to reflect heat much more than some other types of roofing. Reflecting heat back toward its source, the interior of a building on which Corrugated Eternit Sheets are used is likely to be more comfortable to work in, both in winter and summer.

• EASILY APPLIED

Corrugated Asbestos Sheets are easily applied. No especially skilled workers are required. Despite their great strength, they can be readily cut with an ordinary carpenter's hand saw. Holes can be drilled with machinist's twist drills. The size of the sheets, covering large areas. makes rapid application possible.

• APPEARANCE

The light gray color and deep nesting corrugations characteristic of Corrugated Eternit Sheets present an exceptionally pleasing appearance.

Unlike other materials which require frequent painting to preserve them they retain their attractive appearance without painting and virtually without maintenance.

• ECONOMICAL

From every standpoint Corrugated Eternit Asbestos-cement Sheets are economical.

Because they can be applied directly over the structural frame their first cost is nominal.

Their economy is still more striking when measured by the length of maintenance free service they will give. Under ordinary conditions Eternit Sheets will outlast the life of any industrial building.

Moreover they do not require painting and are virtually free from any maintenance expense.

Repairs to roofs and sidewalls which are costly and are likely to interrupt plant operations are eliminated with Corrugated Eternit Sheets.

• ENGINEERING SERVICE

To secure the fullest advantages from Corrugated Eternit Asbestos construction at the least expense, preliminary plans for industrial buildings should be submitted to our engineering and estimating department.

This is supervised by expert engineers with years of experience in general construction principles, who are ready to cooperate with any organization who has prospects for the erection of factory buildings.

Roof and sidewalls of this industrial building protected with Corrugated Eternit Sheets.

Cement Plant (above) and Boat Yard (below) roofed and sided with Corrugated Eternit Sheets.

All Types of Industrials Have Chosen RU-BER-OID CORRUGATED ETERNIT Asbestos-cement Sheets for their Plants

Railroads, large industrials, oil companies, utility companies, concerns in the chemical and metallurgical fields and innumerable others have used Corrugated Eternit Sheets because they recognized the desirability and economy of using a structural material which by its nature is permanent, fireproof and non-corrosive.

These concerns have recognized the extreme durability and freedom from upkeep costs inherent in this material.

1—Corrugated Eternit Sheets chosen for this large Chemical Plant.

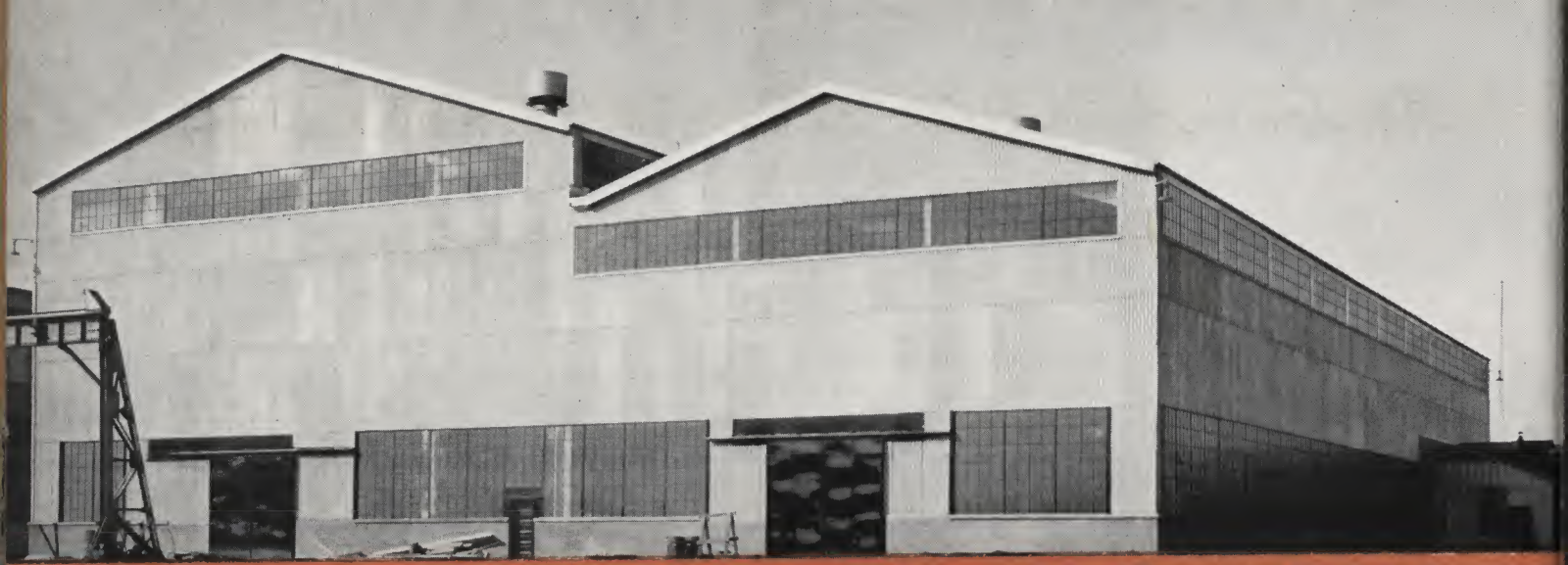
2—One of the world's largest manufacturers of Electrical Appliances uses Corrugated Eternit Sheets on new buildings.

3—Lever Bros., Soap Plant protected with Corrugated asbestos-cement Sheets.

Another Industrial concern eliminated upkeep costs with Corrugated Eternit Sheets.

Sidewalls of this paper mill (below) covered with Corrugated Eternit.

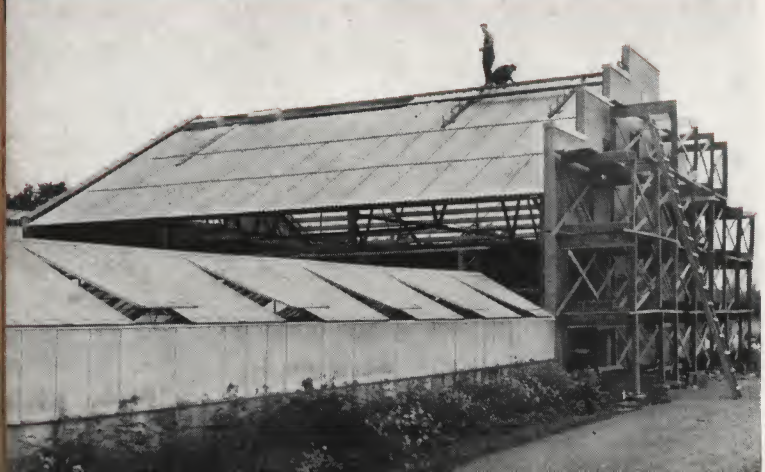
Many Chemical Plants like this one (above) have standardized on Corrugated Asbestos-cement Sheets.



Farmers Co-operative grain elevator (below) sided with Corrugated Eternit Sheets.

Corrugated Asbestos Sheets presents a neat appearance on roofs and sidewalls of Industrial Buildings.

Corrugated Asbestos Sheets being applied on a greenhouse roof (below).



The following is a partial list of U. S. Government Departments, Prominent Industrial Concerns and Public Utilities who have expressed their confidence in RU-BER-OID CORRUGATED ETERNIT Asbestos Sheets on their own Buildings:

OWNER	LOCATION OF JOB
A. C. Spark Plug Division	Federal, Ill.
Addressograph-Multigraph Co.	Euclid, O.
Alpha Portland Cement Co.	Martins Creek, Pa.
American Cyanamid & Chemical Corp.	Mobile, Ala.
American Smelting & Refining Co.	Flint, Mich.
American Steel & Wire Co.	Donora, Penn.
Atlantic and Pacific Tea Co.	Bronx, N. Y.
Baker Chemical Co.	Phillipsburg, N. J.
Bridgeport Brass Co.	Indianapolis, Ind.
Chesapeake-Camp Corp.	Franklin, Va.
Dravo Corp., Engineering Works Division	Pittsburgh, Pa.
Ford Motor Co. (River Rouge Plant)	Detroit, Mich.
General Electric Co.	Schenectady, N. Y.
Goodyear Tire & Rubber Co.	Akron, O.
Gulf Oil Corp.	Port Arthur, Tex.
Lever Brothers Co.	Baltimore, Md.
Merck & Co.	Rahway, N. J.
Missouri Pacific Railroad	Atchison, Kansas
Missouri Portland Cement Co.	Sugar Creek, Mo.
National Carbon Co.	Clarksburg, W. Va.
National Lead Co.	North Creek, N. Y.
New Orleans Public Service Co.	New Orleans, La.
Newport News Shipbuilding Co.	Newport News, Va.
New York, New Haven & Hartford R. R. Co. Warehouse	So. Boston, Mass.
New York State Electric & Gas Corp.	Dresden, Yates Co., N. Y.
Pittsburgh Corning Co.	Deer Park, Tex.
Ralston Purina Co.	Davenport, Ia.
Sinclair Refining Co.	Philadelphia, Pa.
Shell Oil Co.	Port Allegheny, Pa.
Socony Vacuum Oil Co.	East Chicago, Ind.
E. R. Squibb & Son	New Brunswick, N. J.
Standard Oil Company of N. J.	Bayway, N. J.
Texas Company	Bayonne, N. J.
Todd Bath Shipbuilding Corp.	Portland, Me.
U. S. Army Hangars, Bolling Field	Washington, D. C.
U. S. Naval Academy	Annapolis, Md.
U. S. Naval Supply Depot	Sewall's Point, Va.
U. S. Treasury Dept.	Brooklyn, N. Y.
Westinghouse Electric & Manufacturing Co.	Sharon, Pa.
Worthington Pump & Machine Co.	Harrison, N. J.
Wright Aeronautical Corp.	Paterson, N. J.

Corrugated Eternit Dimensions and Weights

CORRUGATED ETERNIT SHEETS:

Corrugated Eternit asbestos sheets are approximately 42″ wide and contain ten corrugations of 4.2″ pitch and overall depth of 1½″. The standard lengths are from 3′0″ to 12′0″ in 6″ multiples. The thickness is approximately 13/32″ at ridge and valley of corrugations and approximately 5/16″ thick at slopes. The standard lengths, areas and weights of sheets are given in the table below.

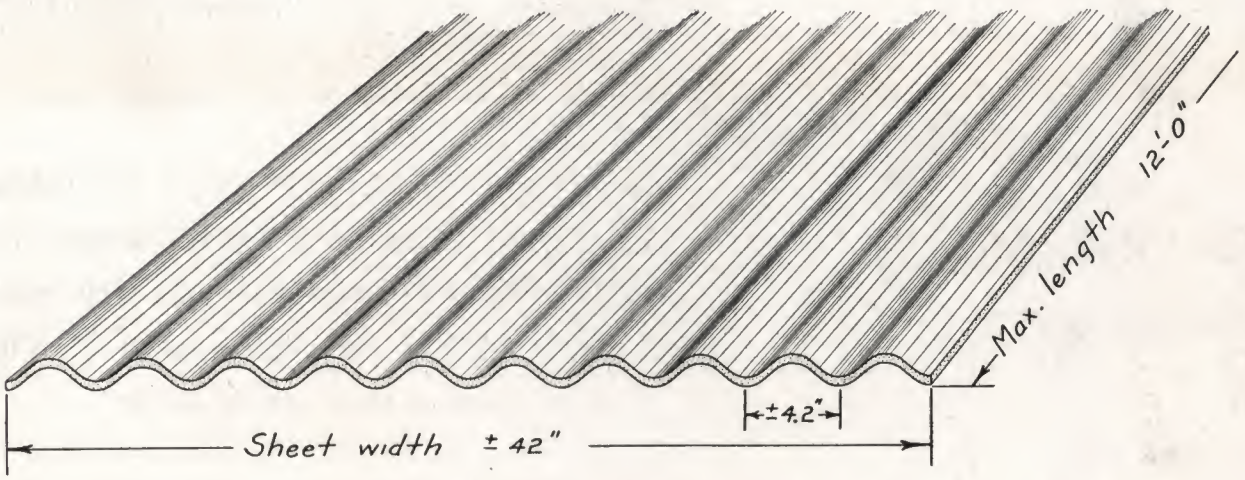


Fig. 1—Corrugated Eternit Asbestos Sheet

STANDARD LENGTHS, AREAS AND APPROXIMATE WEIGHTS OF SHEETS:

Length	Gross area in sq. ft.	Approx. net weight per sheet uncrated
3′-0″	10.50	42
3′-6″	12.25	49
4′-0″	14.00	56
4′-6″	15.75	63
5′-0″	17.50	70
5′-6″	19.25	77
6′-0″	21.00	84
6′-6″	22.75	91
7′-0″	24.50	98
7′-6″	26.25	105
8′-0″	28.00	112
8′-6″	29.75	119
9′-0″	31.50	126
9′-6″	33.25	133
10′-0″	35.00	140
10′-6″	36.75	147
11′-0″	38.50	154
11′-6″	40.25	161
12′-0″	42.00	168

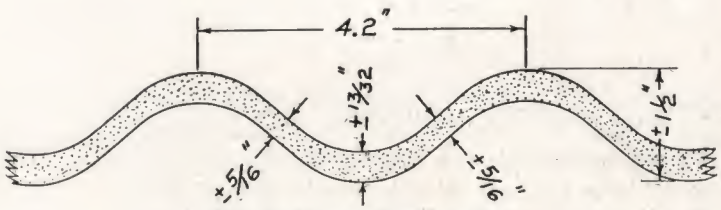


Fig. 2—Eternit Corrugation

The approximate net weight per sheet uncrated is based on ± 4 lbs. per sq. ft., when crated the average weight is increased by 20%. Sheet lengths other than standard, are cut and charged for on the basis of the next longer standard size.

WEIGHTS:

Sheets ± 4 lbs. per square foot uncrated and approximately 4.8 lbs. per square foot crated. An additional charge is made for crating.

Eternit Type C ridge roll weighs ± 3 lbs. per foot.

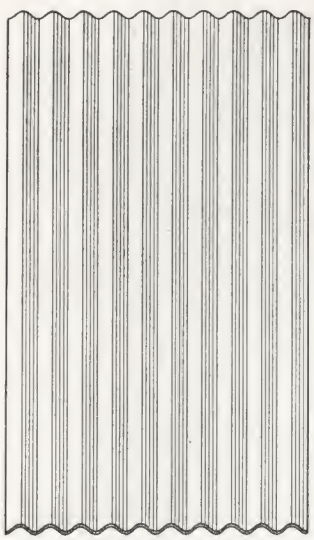
Eternit Type L corner roll weighs ± 3.5 lbs. per foot.

Eternit Type S louvre blades weigh ± 3 lbs. per foot.

Sheets and Accessories

SHEETS:

Corrugated Eternit Sheets are manufactured with square corners; thus, are designed for any job using the standard method of staggered joint application. The square-corner sheets are identified as Type "X" (illustrated below). Although some alternate types of application, such as the cut-corner method, have been used, we highly recommend the square-corner, staggered joint method as being far superior to any other.



Type X.

Fig. 3

ETERNIT FINISHING PIECES:

Eternit finishing pieces such as ridge roll, corner roll, louvre blades and eave trim are furnished, having the same composition as the Corrugated Eternit asbestos sheets.

ACCESSORIES:

Corrugated Eternit asbestos sheets are furnished with standard clip fasteners, drivescrews and bolts, which have a corrosion-resisting finish. The fasteners are so designed as to accommodate all standard structural steel conditions. Ruberoid gray asbestos roofing putty is used for sealing fastener heads and black roofing putty is used for sealing the side and end laps.

RUBEROID FILLER STRIPS:

When Corrugated Eternit sheets are applied on the sides and roofs of buildings, the corrugations form openings. This can readily be understood by laying a corrugated sheet on a flat surface and observing the openings between the two. Such openings normally occur at window heads, at the lower edge of siding, at the eaves and like places. Very often it is desired to close such corrugations and, for this purpose, a preformed Type A filler strip has been designed. Sometimes metal flashing or like materials are placed on the top surface of the corrugated sheets and it is desired to close the corrugations between the metal flashing and sheet. For this purpose, a Type B filler strip has been formed. It is also necessary to have a base for the half round ridge roll and close the corrugations between the sheet and ridge roll. For this purpose, a special filler strip Type R with a groove in the top face is made. Therefore, to close the corrugations on the bottom side of the sheet, Type A filler strips are used, to close the corrugations on the top of the sheet, Type B fillers are used and special fillers Type R are used as a base for the ridge roll. The fillers are tapered which compensates for the side lap of the sheets. The length of the strip is the same as the net covering width of the corrugated sheet, namely, 37¾". The specifications for the three types of fillers are illustrated below.

When Corrugated Eternit Sheets overhang brick, concrete or such masonry walls, it is our recommendation that the corrugations be closed by pointing up with cement mortar.

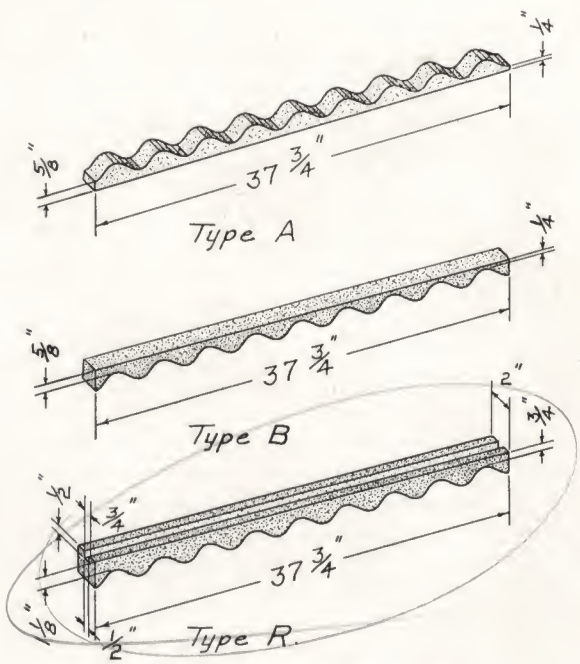


Fig. 4—Ruberoid Filler Strips

Recommended Method of Construction...with Staggered Joints

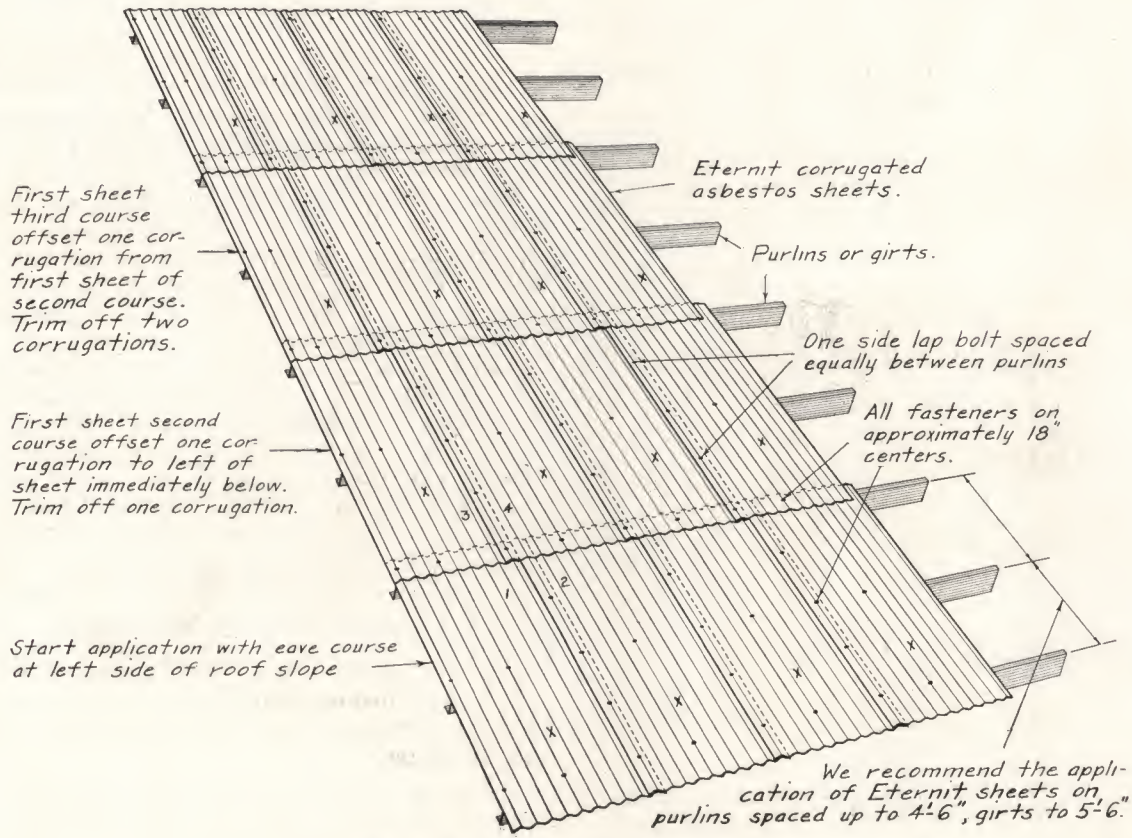


Fig. 5—Staggered Joint Construction

We strongly recommend that all roofing and siding be applied using the staggered joint method of construction. The offsetting of the side laps has the effect of making the roofing and siding more water tight. Also the end laps can be varied at will which usually enables the manufacturer to materially increase the length of the end lap without increasing the cost of the job. Since it is possible with this type of construction to have different end laps, a relatively few different length sheets can be supplied which greatly reduces the application and engineering cost.

Therefore, by far the most economical and satisfactory method of applying the Corrugated Eternit asbestos sheets is the staggered joint method of construction. With this method it is not necessary to miter the corners of any sheets and eliminates the necessity of having preestimated lengths of end laps. The detail of this method is illustrated above.

In spite of its many disadvantages, the cut corner method is sometimes demanded by the customer. When required, Corrugated Eternit sheets can also be supplied for application by the cut corner method.

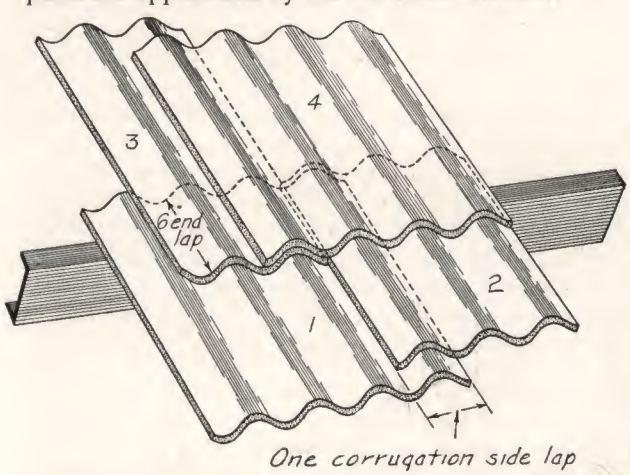


Fig. 6—Detail of Staggered Joint

Alternate Method of Construction . . . with Cut Corners

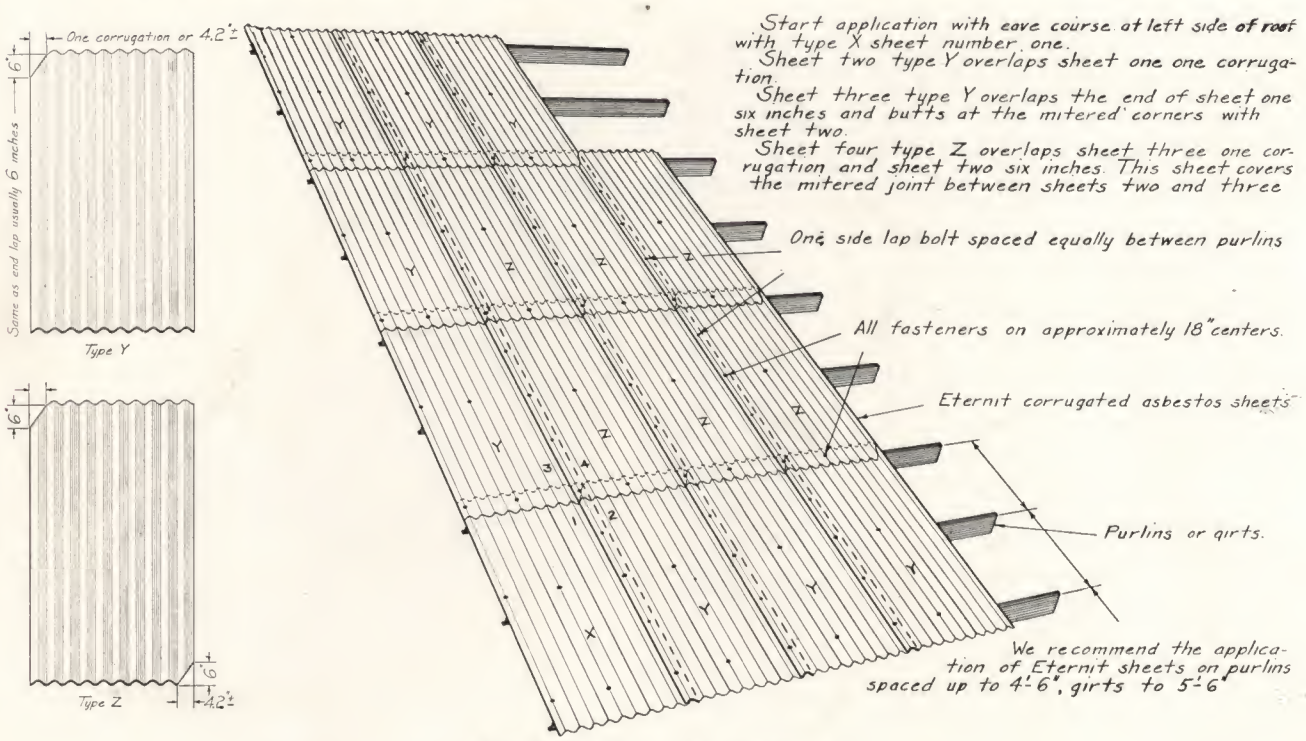


Fig. 7—Cut Corner Construction

To demonstrate the advantages of the standard staggered joint method of application with square-corner, Type X Corrugated Eternit Sheets (described on page 8) over the cut-corner method, we illustrate this latter method here.

As will be noted, the cut-corner method requires three types of sheets instead of only one as with the staggered joint method. They are identified as Type X (illustrated page 8) and Types Y and Z (illustrated above). The position and specifications of the sheet types are indicated in the accompanying drawings. A study of these drawings will show that in order to correctly fit the sheets at their diagonal butt joints, it is essential that the length of each sheet be determined accurately within a fraction of an inch. It is therefore necessary that complete and exact dimensions covering the structure be finished so that the exact sheet lengths can be determined.

In the cut-corner method of construction the mitering of the sheets reduces the effective end lap in half. Also the mitered joint is a potential source of leakage. Experience has shown that if for any reason the free flow of the water is obstructed in the corrugation on the top surface of the roof causing the water to be slightly deflected, it will very often run through the mitered joint. Also it is costly to miter the corners of all the sheets and increases the application cost due to the necessity of having a great number of different length sheets on the job as well as two or three types of the same length.

The cut-corner method is sometimes specified by architects who prefer the appearance of the straight vertical lines resulting from this type of construction. However the greater safety of the staggered joint method should be the most important consideration, and for that reason The Ruberoid Co. strongly recommends the staggered joint in preference to the cut-corner method.

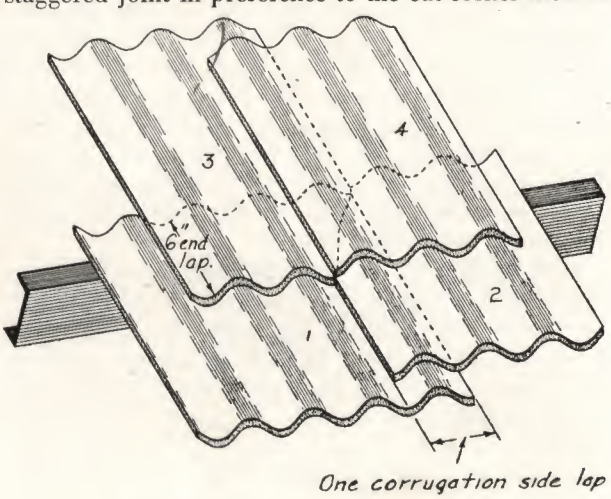


Fig. 8—Detail of Cut Corner Joint

Standard Fasteners for Corrugated Eternit Asbestos

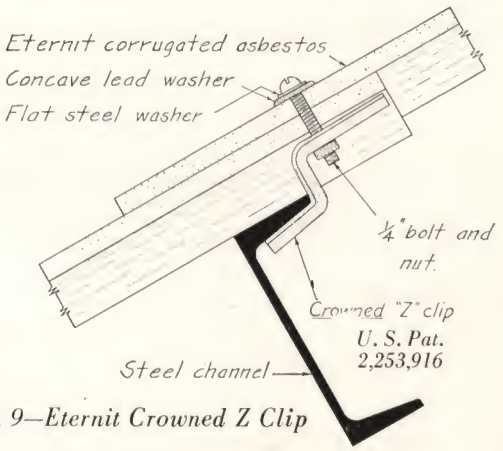


Fig. 9—Eternit Crowned Z Clip

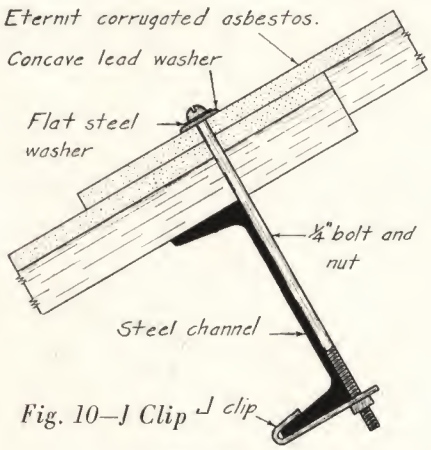


Fig. 10—J Clip

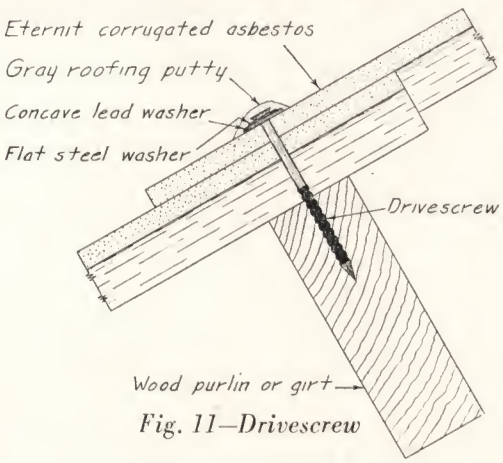


Fig. 11—Drivescrew

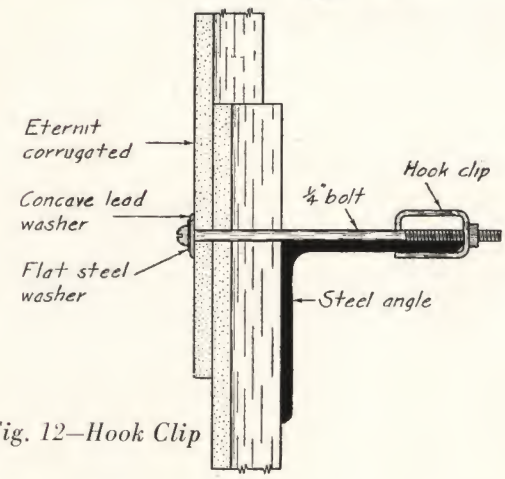


Fig. 12—Hook Clip

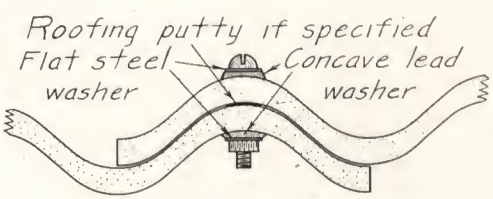


Fig. 13—Seam Bolt

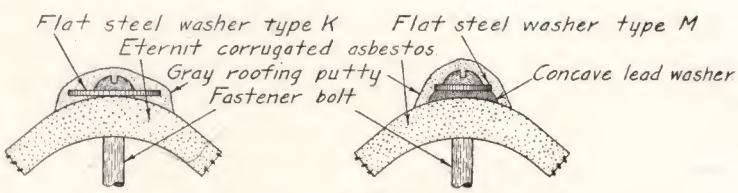
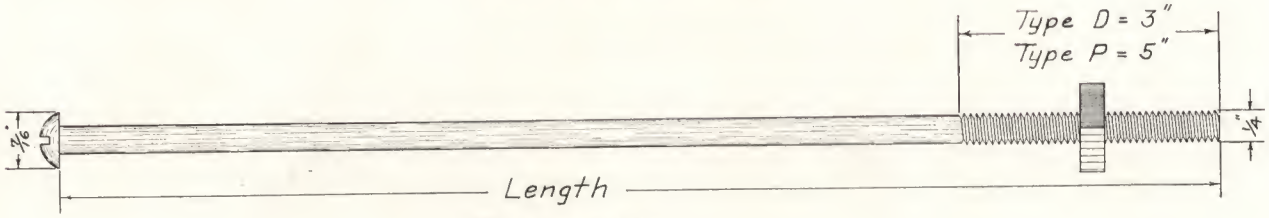


Fig. 14—Typical Fastener Heads—Fig. 15

We have developed an improved type of fastener which has unusual strength, rigidity, and utility. It can be used to fasten the Corrugated Eternit sheets to any standard steel member when the flanges point up. This clip is our newly developed Crowned Z Clip. The great strength and rigidity of this clip lies in the fact that it has been crowned. The strength has also been increased by the improved design with a sharp offset so as to place the bolt as close as possible to the supporting steel member. We recommend on newly designed buildings that the flanges of all the roofing and siding steel members be pointed up to permit the use of this fastener.

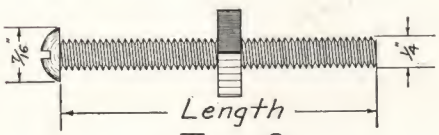
The fasteners detailed above will fit any standard structural steel condition. When the flanges of the channel purlins and girts are turned up the crowned clip is used to fasten the Corrugated Eternit to the steel frame. When the flanges point down, the J clip is the ideal fastener. For angles when flanges point up, the crowned clip is used and when the flanges point down, the hook clip is employed. When the building frame is of wood, drive screws are selected. Seam bolts are placed in the side lap of the sheets between the structural supports. There are two typical types of fastener heads, the large flat steel washer and the combination flat steel and lead washer. Lead washers serve as a cushion between the fastener and sheet. The heads of all fasteners on the weather side of the sheet should be sealed with Ruberoid gray asbestos roofing putty.

Specifications of Standard Eternit Fasteners for Corrugated Asbestos Sheets



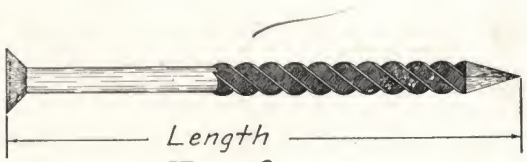
Type D and P

Fig. 16



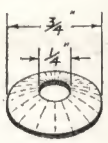
Type G

Fig. 17



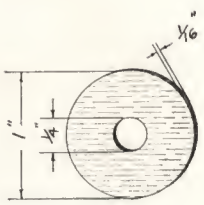
Type O

Fig. 18



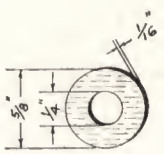
Type I

Fig. 19



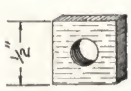
Type K

Fig. 20



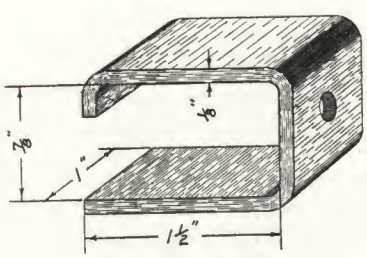
Type M

Fig. 21



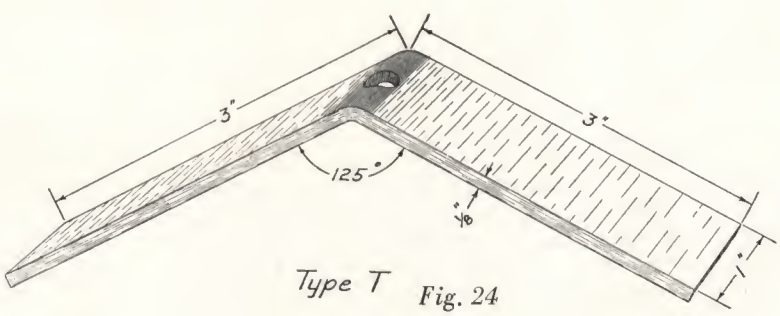
Type N

Fig. 22



Type H

Fig. 23

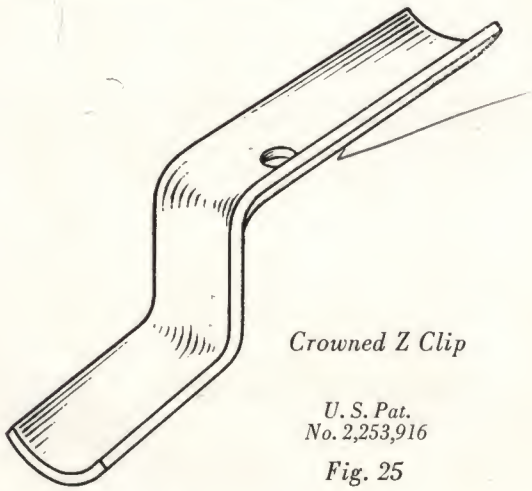


Type T *Fig. 24*

All bolts are 1/4" in diameter, have round slotted heads, roll threads and are supplied complete with nuts. Bolts up to 3" long are threaded full length. Bolts up to 12" long have a 3" thread and bolts over 12" long have a 5" thread. The bolts and nuts are cadmium plated. The clips, drive screws, and steel washers are furnished hot dipped galvanized.

Specifications of Standard Eternit Fasteners for Corrugated Asbestos Sheets (cont'd)

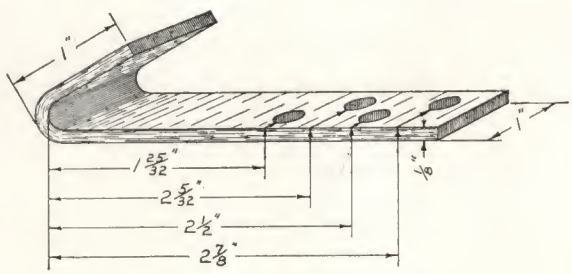
TYPE.	FASTENER.	SIZE	FINISH.	NO. PER LB.
G	Short bolts.	¼" x 1¼"	Cadmium plated.	54
"	"	1½"	"	48
"	"	1¾"	"	44
"	"	2"	"	39
"	"	2½"	"	33
"	"	3	"	28
D	Long bolts.	3½"	"	25
"	"	4"	"	22
"	"	4½"	"	20
"	"	5"	"	18
"	"	5½"	"	16
"	"	6"	"	15
"	"	6½"	"	14
"	"	7"	"	13
"	"	7½"	"	12
"	"	8"	"	11
"	"	9	"	10
"	"	10	"	9
"	"	11	"	8
"	"	12	"	7
P	"	13	"	6
"	"	15	"	5
"	"	17	"	4
"	"	19	"	3
			"	
N	Nuts.		"	
I	Washers.	¾" O.D. x ¼"	Lead.	77
K	"	1" O.D. x 9/32"	Galv.	74
M	"	⅝" O.D. x 9/32"	"	225
J	J Clip 4 hole		"	7
E	Eave clip.		"	4
T	Ridge clip.		"	5
H	Hook clip.		"	6
Z	Crowned clip.		"	6
O	Drive screw.	#14 - 4"	"	28
"	"	#14 - 3"	"	33



Crowned Z Clip

U. S. Pat. No. 2,253,916

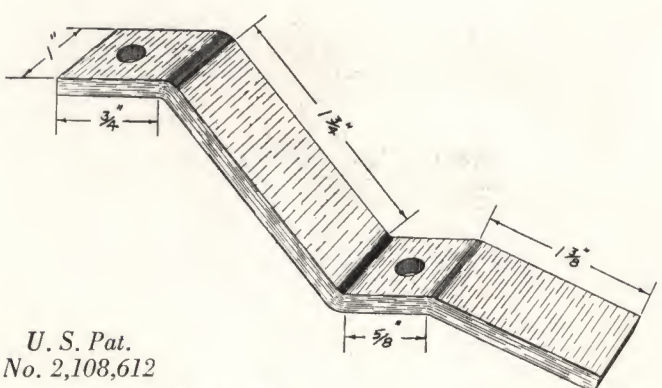
Fig. 25



Used on any structural channel up to 10"-15.3#

Type J

Fig. 26



U. S. Pat. No. 2,108,612

Type E

Fig. 27

Eternit Asbestos-Cement Finishing Pieces

RIDGE ROLL:

Eternit asbestos cement ridge roll Type C has the same composition as the Eternit roofing sheets and is 8'-0" long. The Type C batten is 6" long. The batten is placed on the inside of the butt joint of the ridge roll. Both edges of the completed ridge roll rest on a special Ruberoid filler strip, Type R. This filler strip is designed with a groove on the top face to properly receive the ridge roll. The lower edge is so shaped as to fit and close the corrugations of the roofing sheets. The straight line effect obtained by long sections free from visible battens gives this ridge roll a most attractive appearance. It is economical and fast of application.

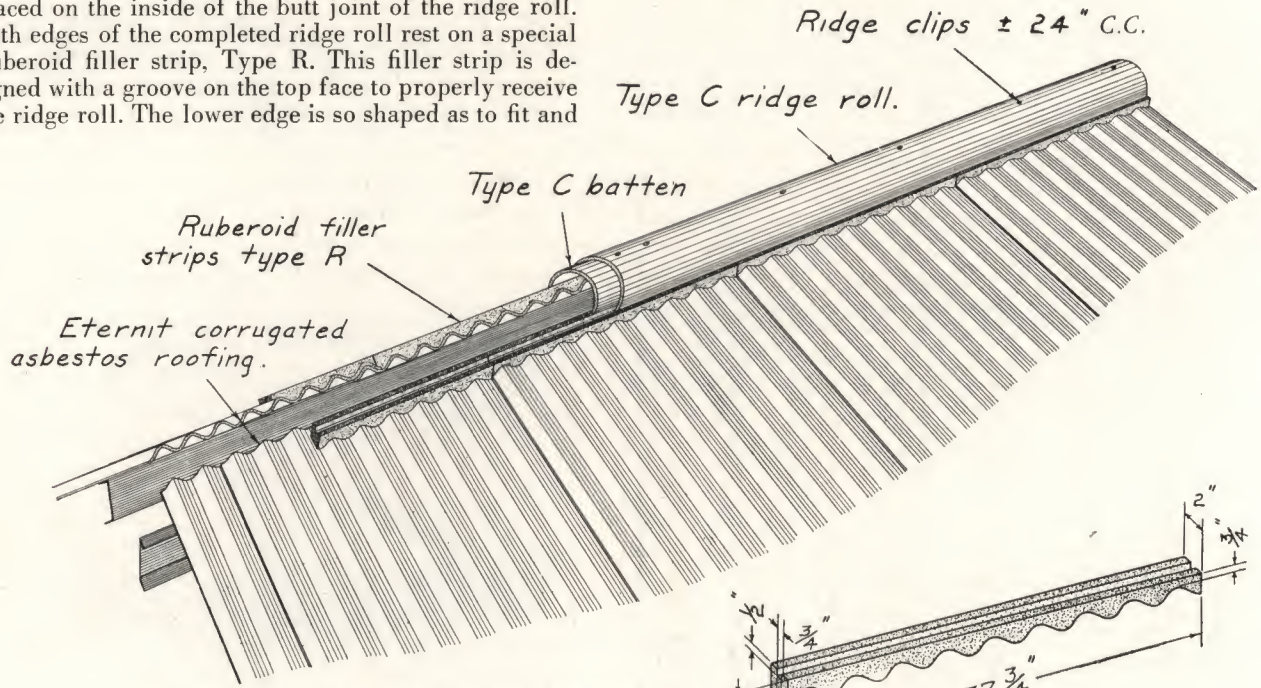


Fig. 28—Eternit Type C Ridge Roll-Assembly

Fig. 31—Ruberoid Type R Filler Strip

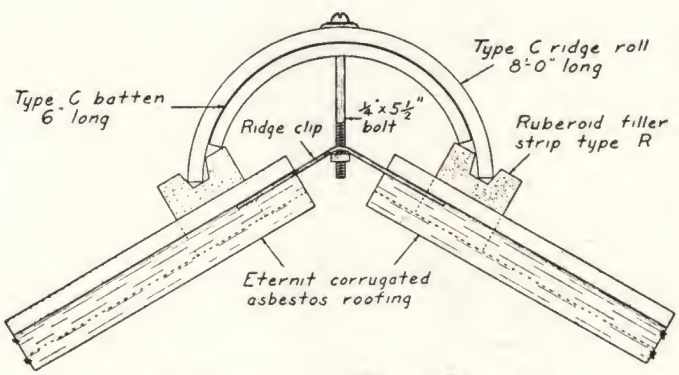


Fig. 30—Cross-Section Type C Ridge Roll

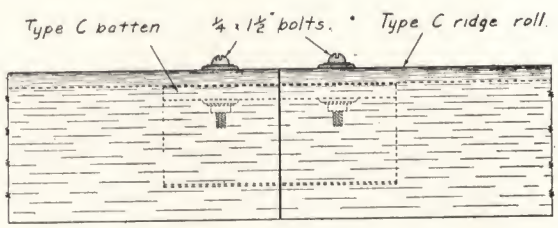


Fig. 29—Type C Ridge Roll Joint

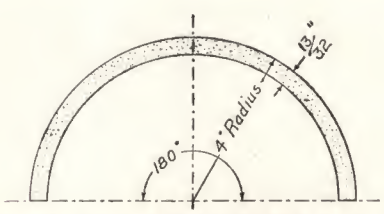


Fig. 32—Type C Ridge Roll 8'-0" Long

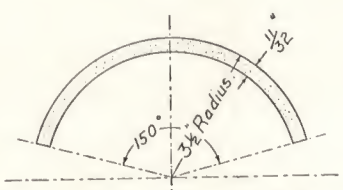


Fig. 33—Type C Batten 6" Long

Eternit Asbestos-Cement Finishing Pieces (cont'd)

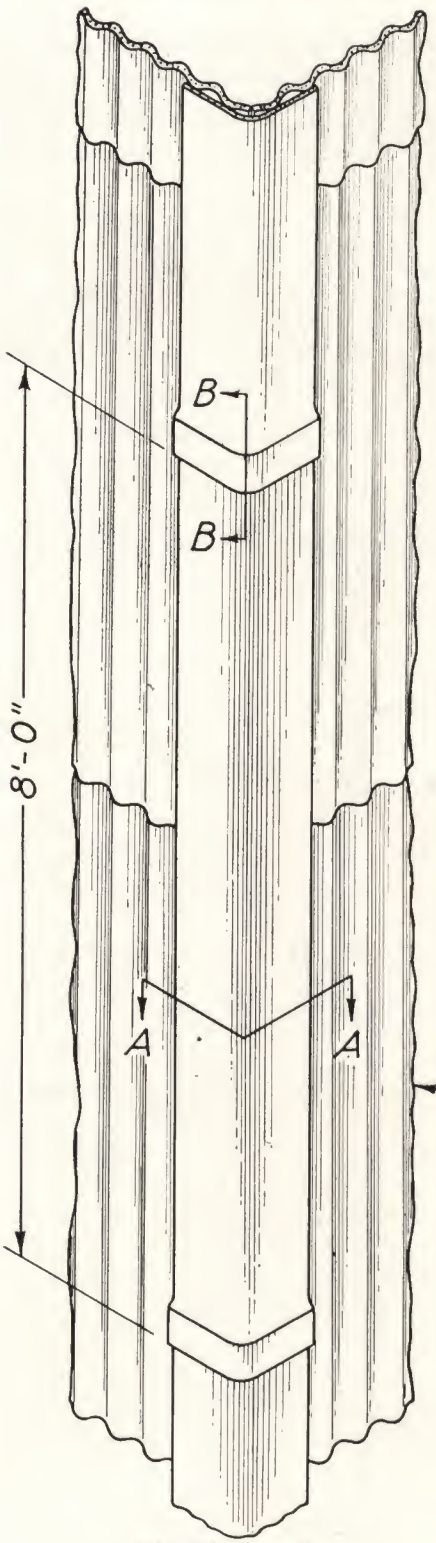
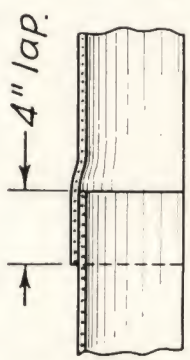


Fig. 34—Type L Corner Roll Assembly

CORNER ROLL:

We have developed a new 90° type L corner roll which has offset ends so as to permit a perfect joint between the sections. They are 8'-4" long and have an offset for a 4" end lap. The wings have been made extra wide (7½") for use with the 4.2" corrugation. Due to the offset end, it is not necessary for the end lap of the corner roll to fall at the end lap of the sheets. The corner roll is placed on the outside of the corrugated sheets and the junction between the corner roll and Corrugated Eternit sheets is to be pointed up with a cement grout or gray putty. When used on an inside corner the finishing piece is placed on the inside of the Corrugated Eternit.



Section B-B

Fig. 35
Cross Section End Lap Detail

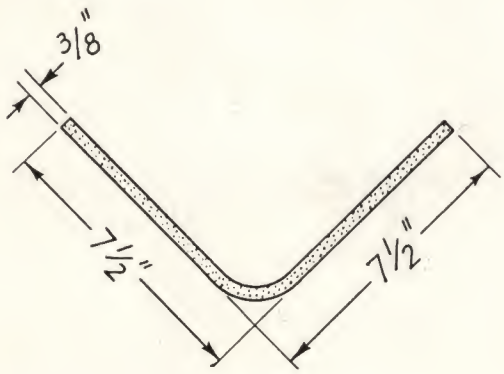
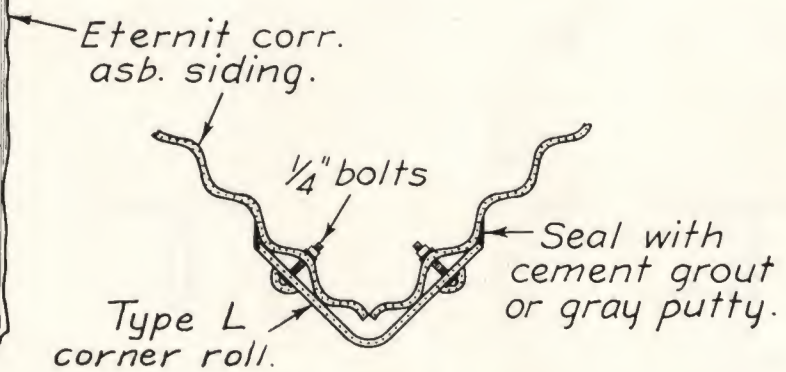


Fig. 36
Cross Section Type L Corner Roll



Section A-A

Fig. 37
Cross Section Type L Corner Roll Assembly

Eternit Gable Finish for Corrugated Asbestos Installation

TYPICAL GABLE DETAILS:

There are two types of structural gable details: When roofing purlins stop at the siding and when the roofing purlins extends through the siding. It is not necessary on some type buildings, to trim the gable ends or close the opening formed by roofing and siding corrugations. When it is desired to do so, a few typical methods are illustrated below.

The most economical and satisfactory design is to stop the purlins at the siding. With this kind of gable construction, a strip of flat Eternit asbestos cement lumber may be placed as illustrated below. The edges of this lumber are sealed so as to completely close the roofing and siding corrugations. The same result may also be obtained at an increased cost, with lead flashing. With this gable detail, the corrugated asbestos roofing sheets must not overhang more than approximately 6" beyond the siding line.

When the purlins extend through the siding, flat Eternit asbestos cement lumber may also be used to close the corrugations. The alternate detail is to support the outside edge of the roofing sheets with a steel angle. If this method is employed, the corrugations of roofing and siding sheets remain open, unless the strip of flat lumber is also employed.

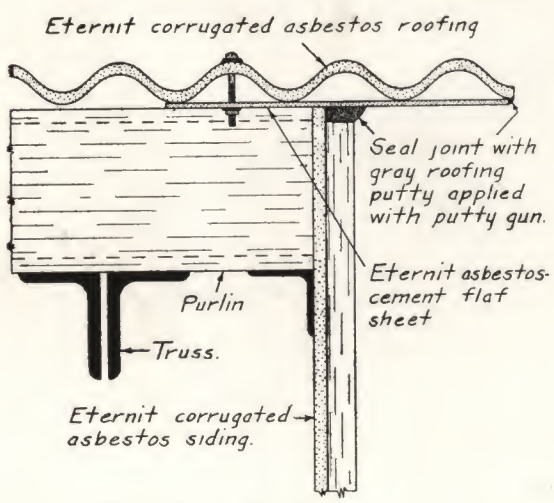


Fig. 38

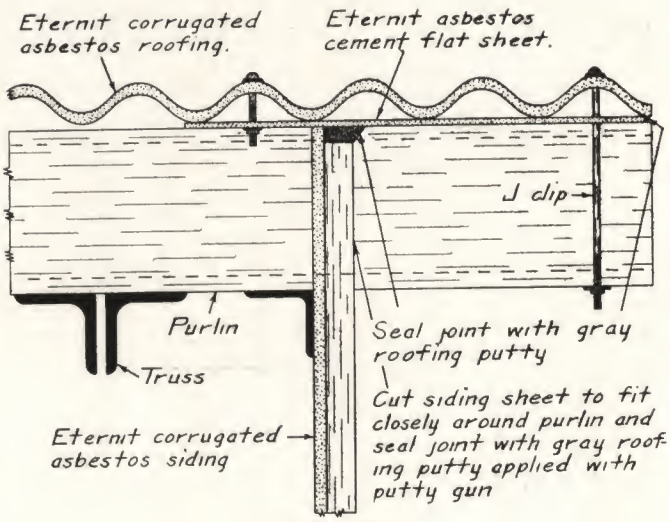


Fig. 39

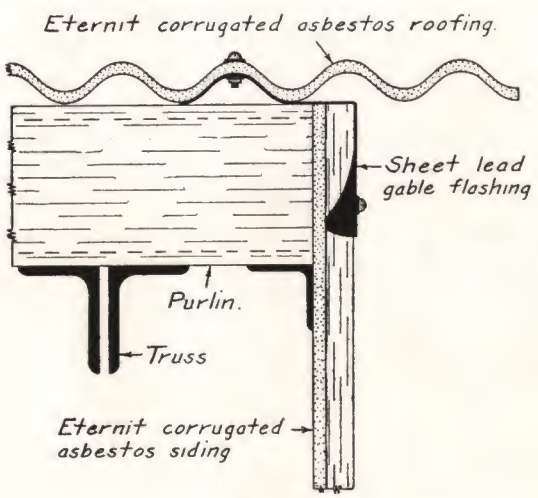


Fig. 40

Details When Purlins Stop at Siding Line

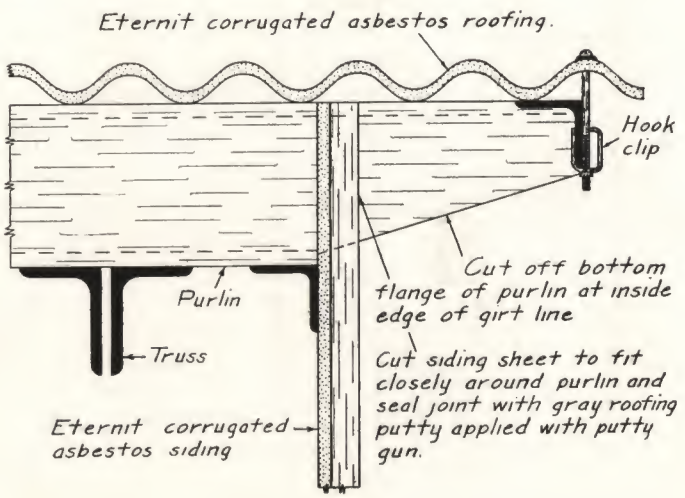


Fig. 41

Details When Purlins Extend Beyond the Siding

Eternit Eave Finish for Corrugated Asbestos Installations

When Corrugated Eternit asbestos sheets overhang the side wall at the eaves of the building, the corrugations form openings. On some buildings, the open corrugations are not objectionable. When it is desired to finish the eaves, but not close the corrugations of roofing or siding sheets, Type L eave trim is recommended, as illustrated below. When it is desired to close the corrugations, three alternate designs are illustrated.

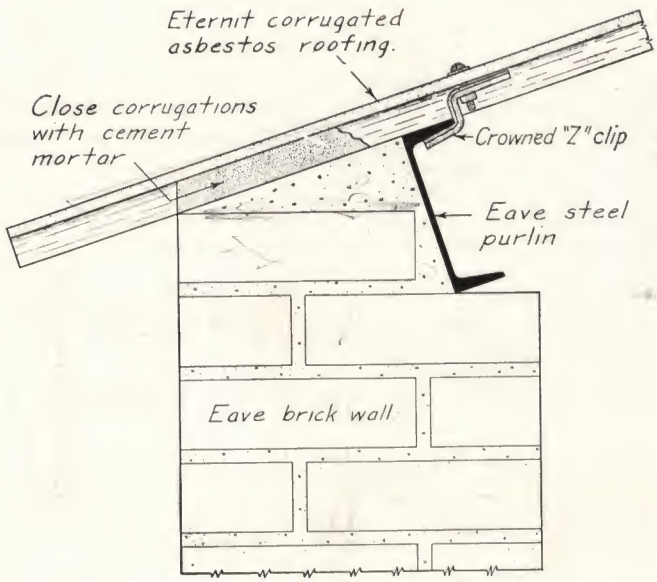


Fig. 42

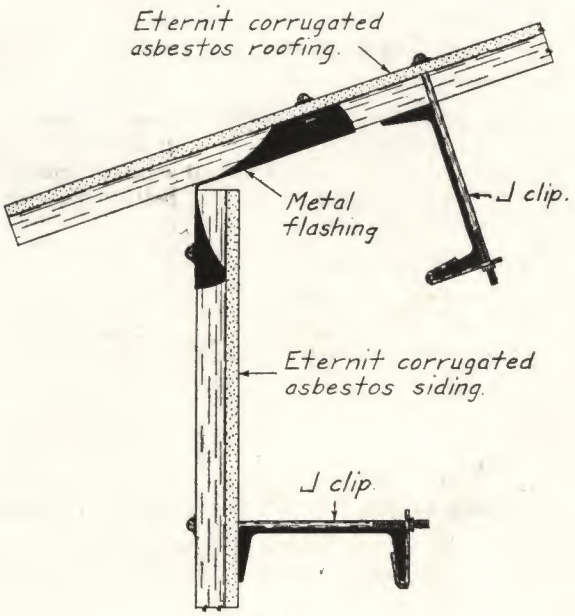


Fig. 43

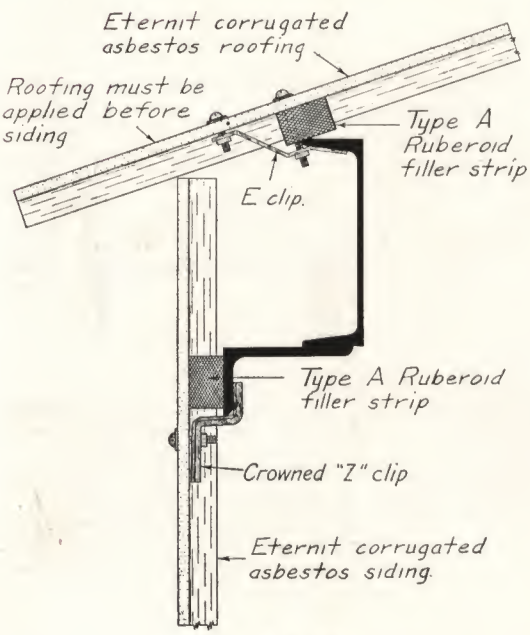


Fig. 44

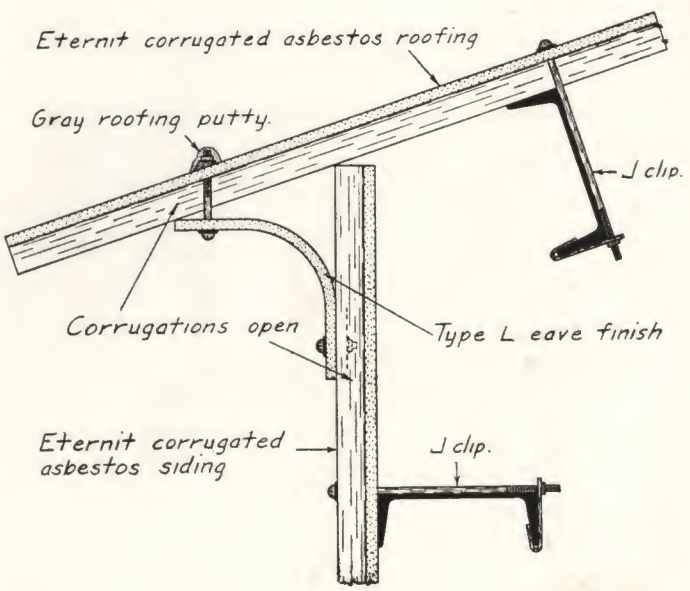


Fig. 45

Typical Eave Finish Details

Ridge Ventilator Details

When metal ridge ventilators are used on Corrugated Asbestos roofs, it is recommended that structural steel framing be employed as a direct base for the ventilator. The steel frame should be designed to support the ventilator 2" above the purlin line, as illustrated below.

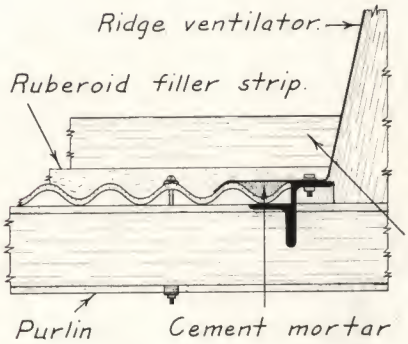


Fig. 46

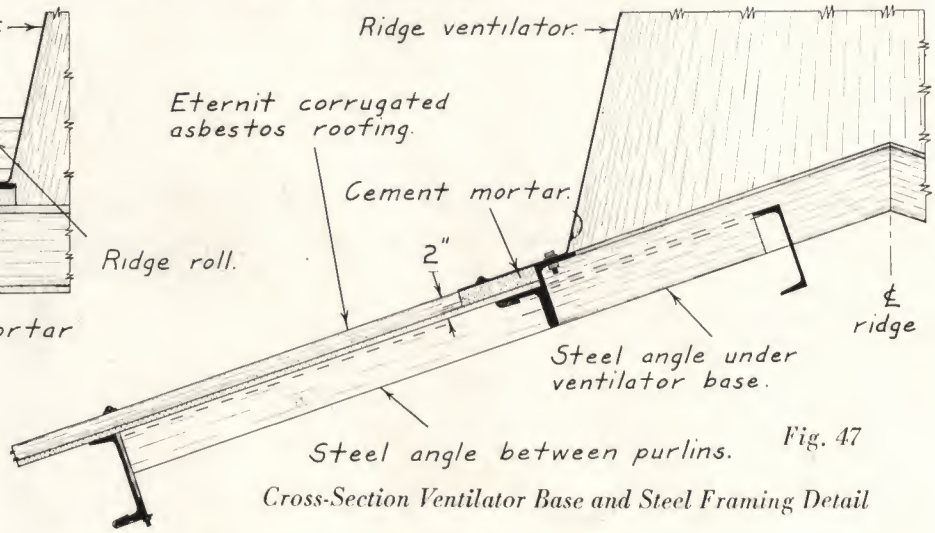


Fig. 47

Cross-Section Ventilator Base and Steel Framing Detail

Typical Siding Ground Details

If it is desired to close the corrugations of the Corrugated Eternit asbestos siding sheets at the ground line, either of the two methods illustrated below may be employed.

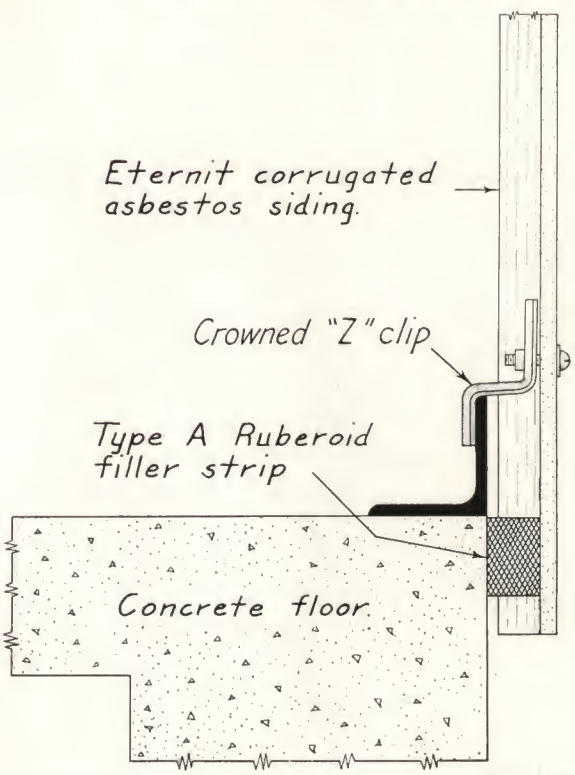


Fig. 48

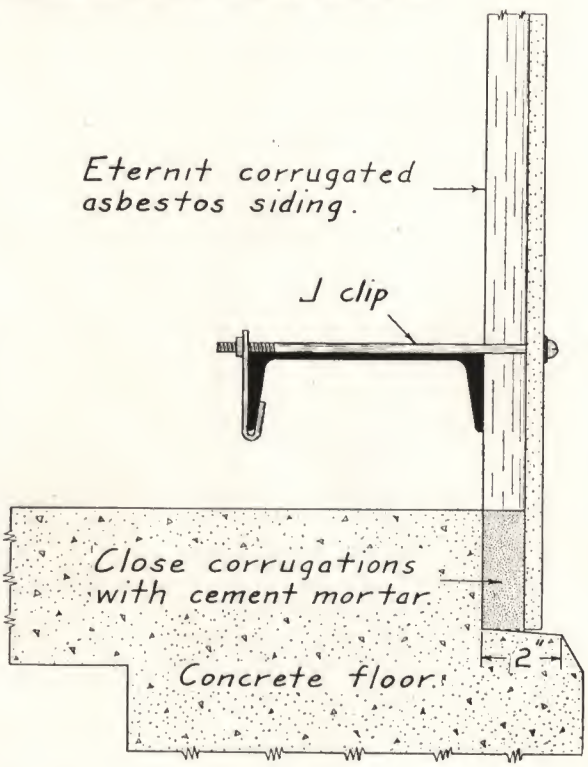


Fig. 49

Base Construction Details

Expansion Joints

Due to the location, use and design of some buildings, it may be desirable to provide expansion joints. Two typical metal expansion joints are illustrated below.

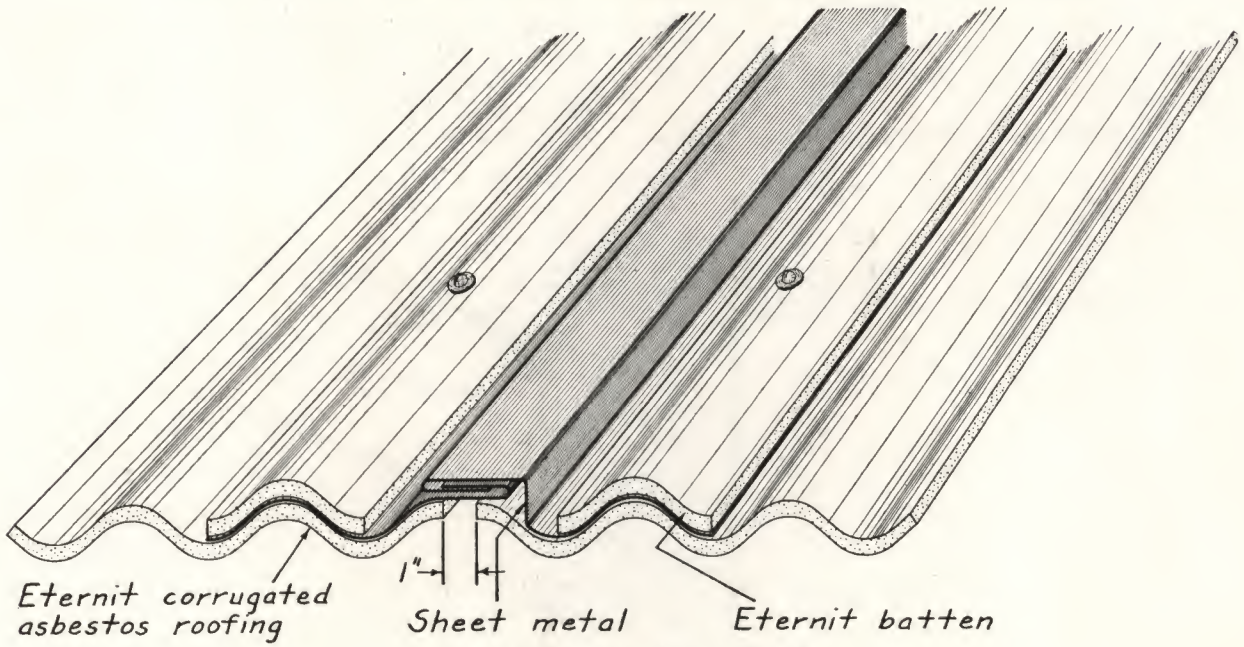


Fig. 50—Loose Lock Joint Detail

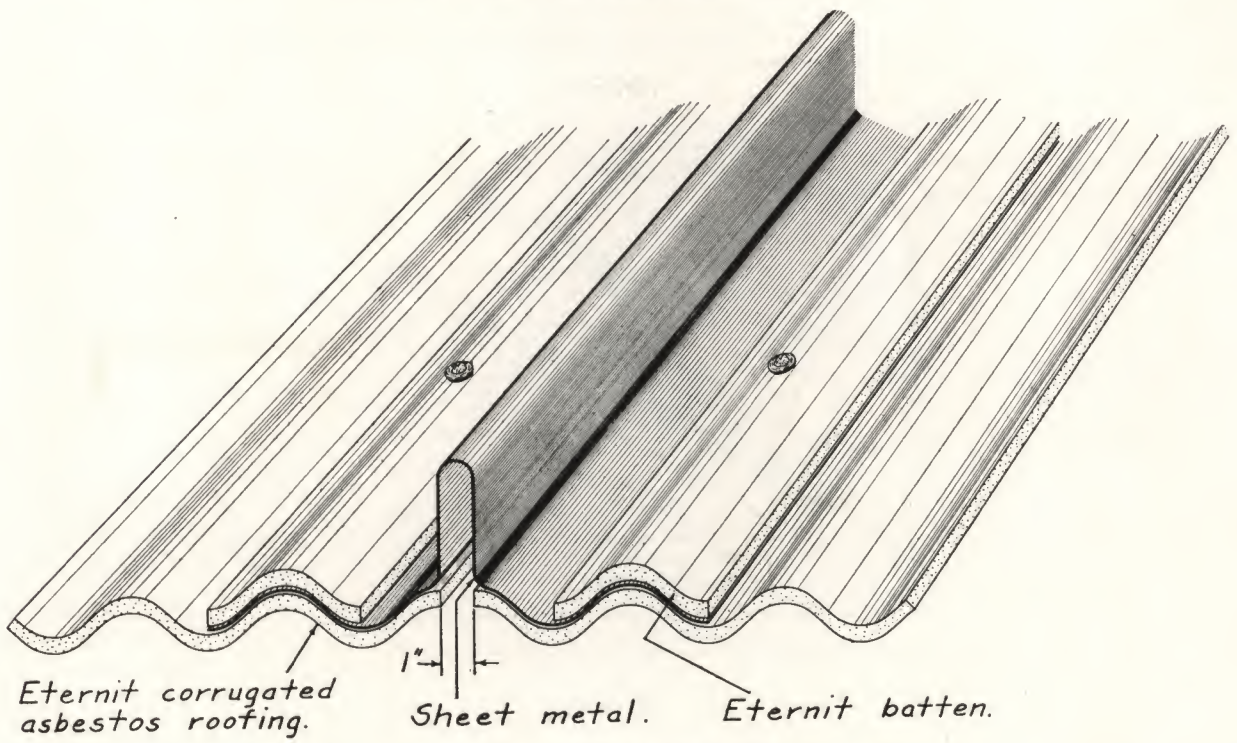


Fig. 51—Spring Joint Detail

Typical Eternit Gutter Details

There are various types of gutters which are required to satisfy special conditions. The most common, however, are the half round metal hanging gutter, the gutter at the junction of corrugated asbestos roofing sheets and parapet walls, and that formed by the junction of two gable type roofs. Two of the most usual types are illustrated below.

The half round metal hanging gutter can be supported by metal brackets, fastened directly to the eave strut or roofing sheets.

There are two alternates for the inside gutters, at the junction of Eternit roofing sheets with parapet walls, and the junction of gable roofs. The metal box type is the most economical, but when the manufacturing conditions of the building require an insulated gutter, the alternate design is recommended.

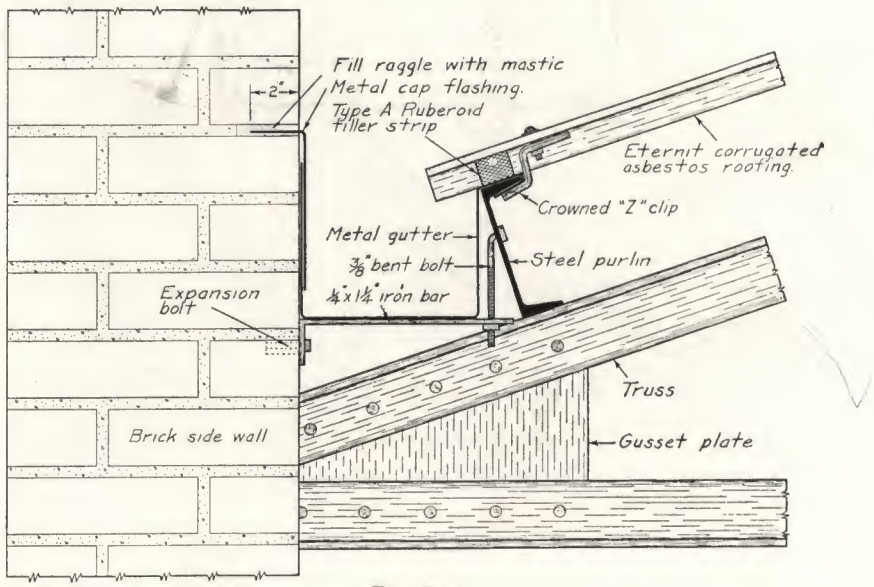


Fig. 52

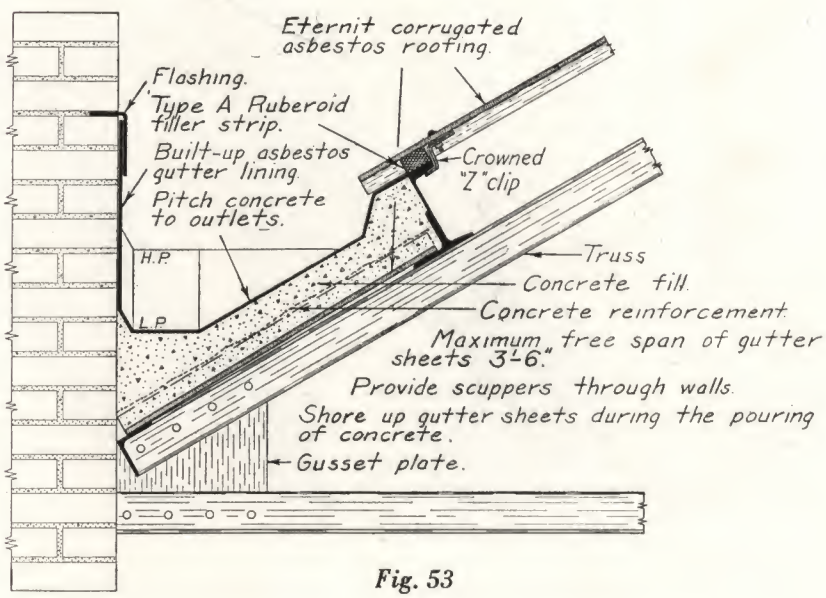


Fig. 53

Gutter Detail Junction Corrugated Eternit Sheets and Parapet Walls

Typical Eternit Gutter Details (cont'd)

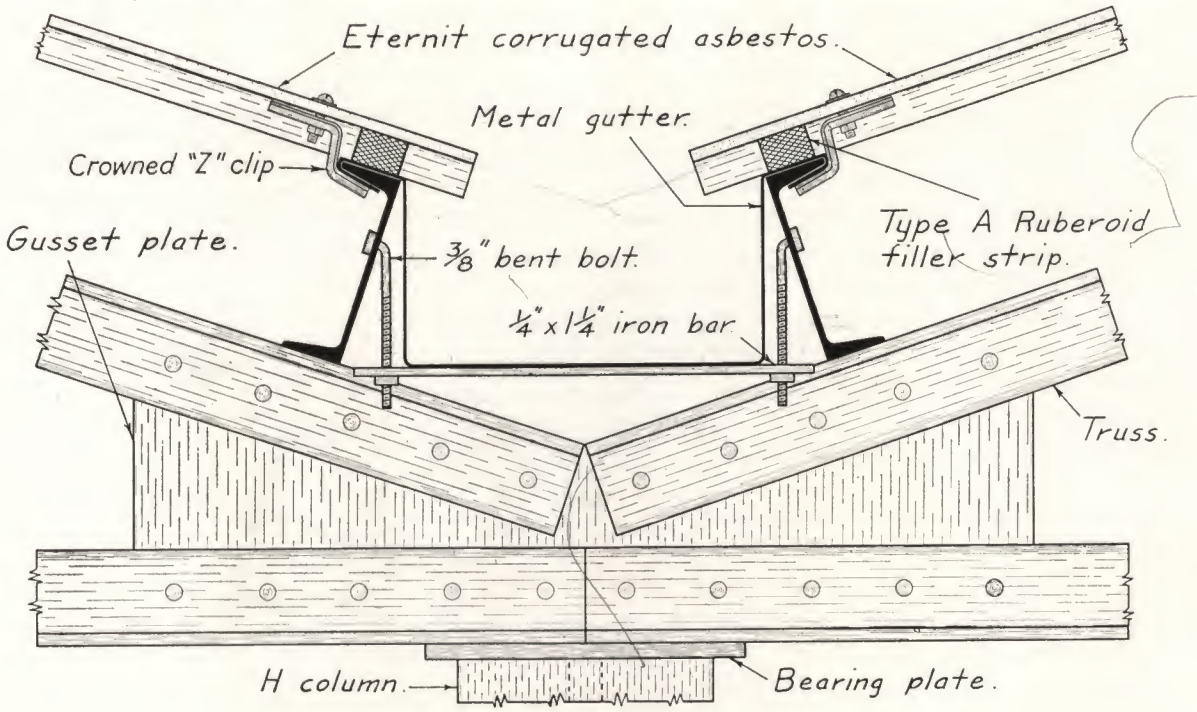


Fig. 54

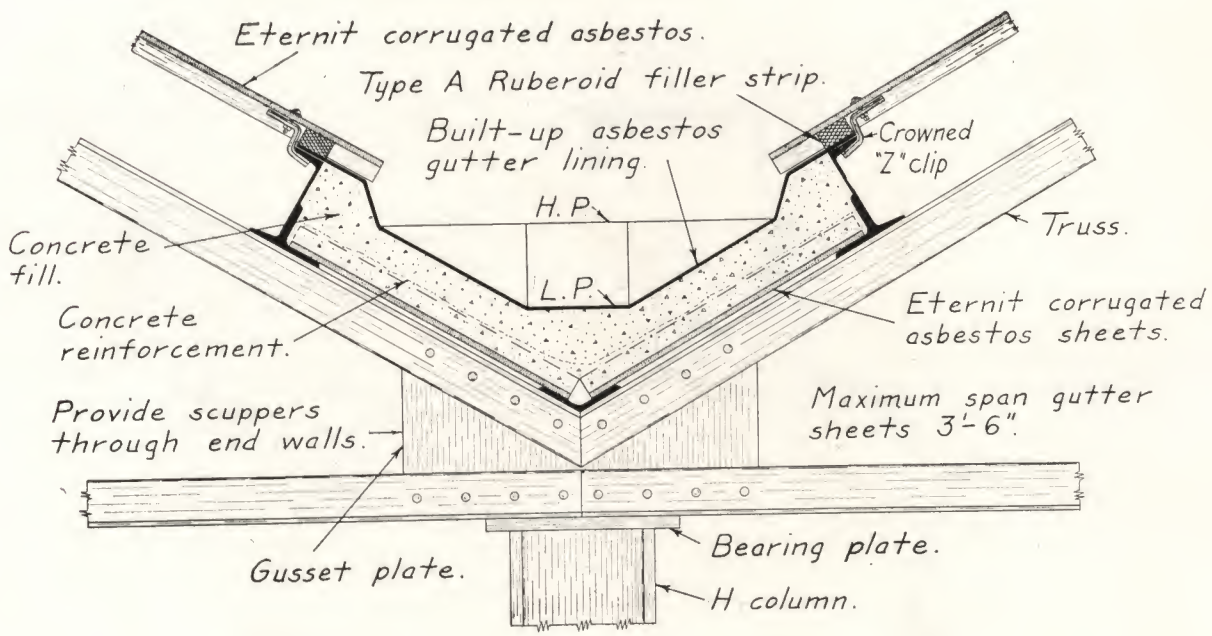


Fig. 55

Gutter Detail Junction Two Gable Roofs

Eternit Flashing Details

Corrugated Eternit asbestos is flashed, using the usual methods employed with sheet roofing on industrial roofs. The most commonly used are illustrated below.

The metal flashing must not be bent at sharp angles, but should be worked to as large a radius as possible. These round bends materially assist the flashing in withstanding the strain, due to expansion, contraction and vibration. Base and cap flashings should be used in maximum lengths of 8 feet.

The selection of the proper flashing metal should be determined by the conditions at the building.

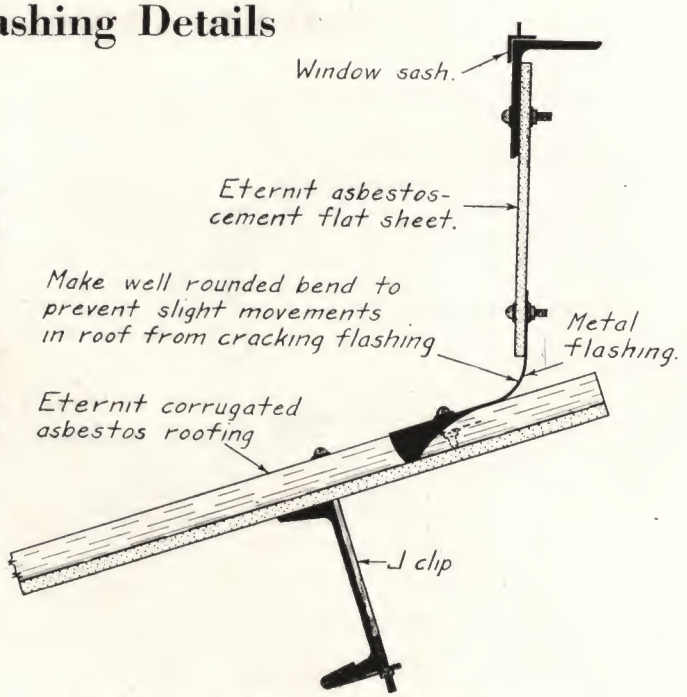


Fig. 56—Cross-Section Monitor Base Flashing

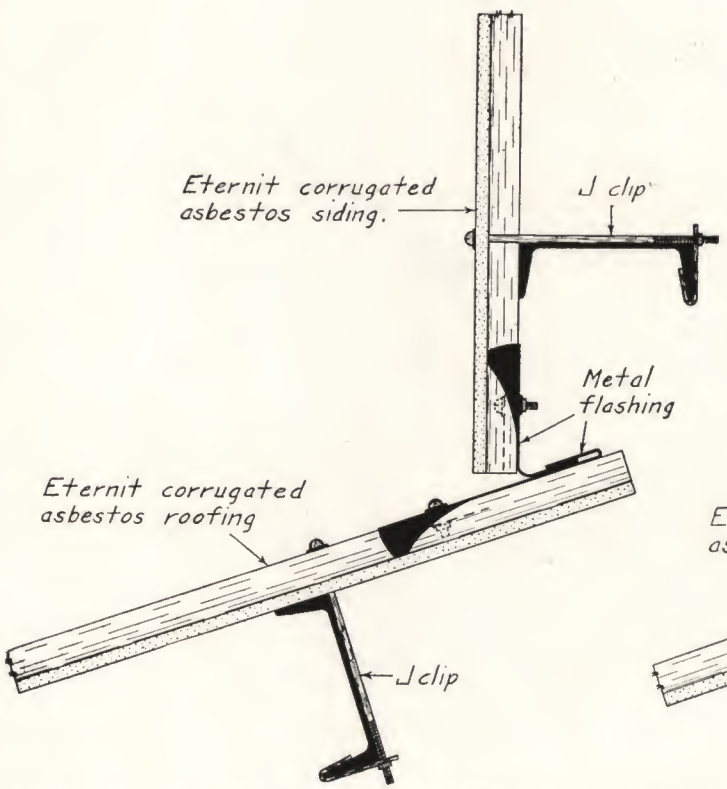


Fig. 57—Special to Allow for Expansion and Contraction

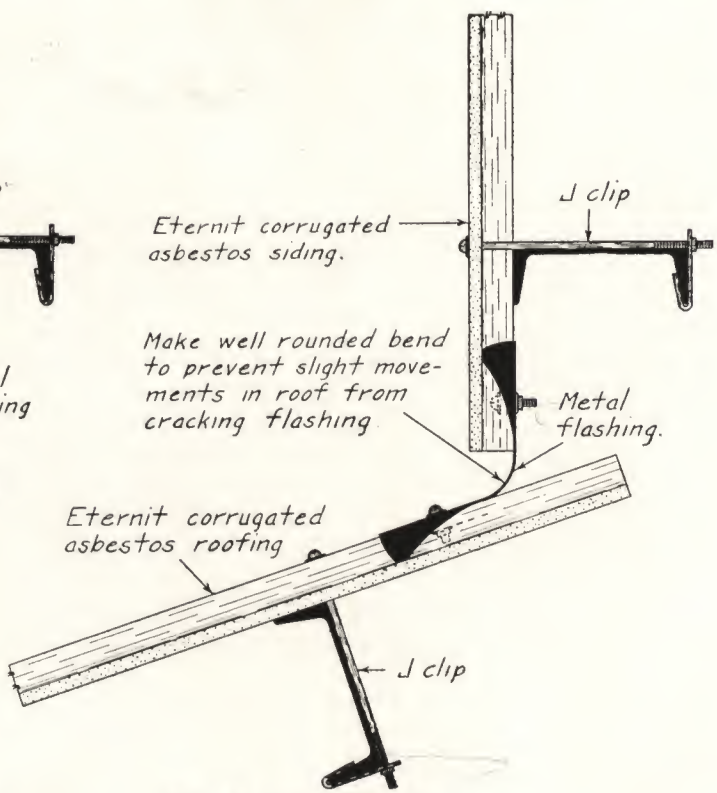


Fig. 58—Standard Detail

Cross-Section Junction Roofing and Lower Edge Siding

Eternit Flashing Details (cont'd)

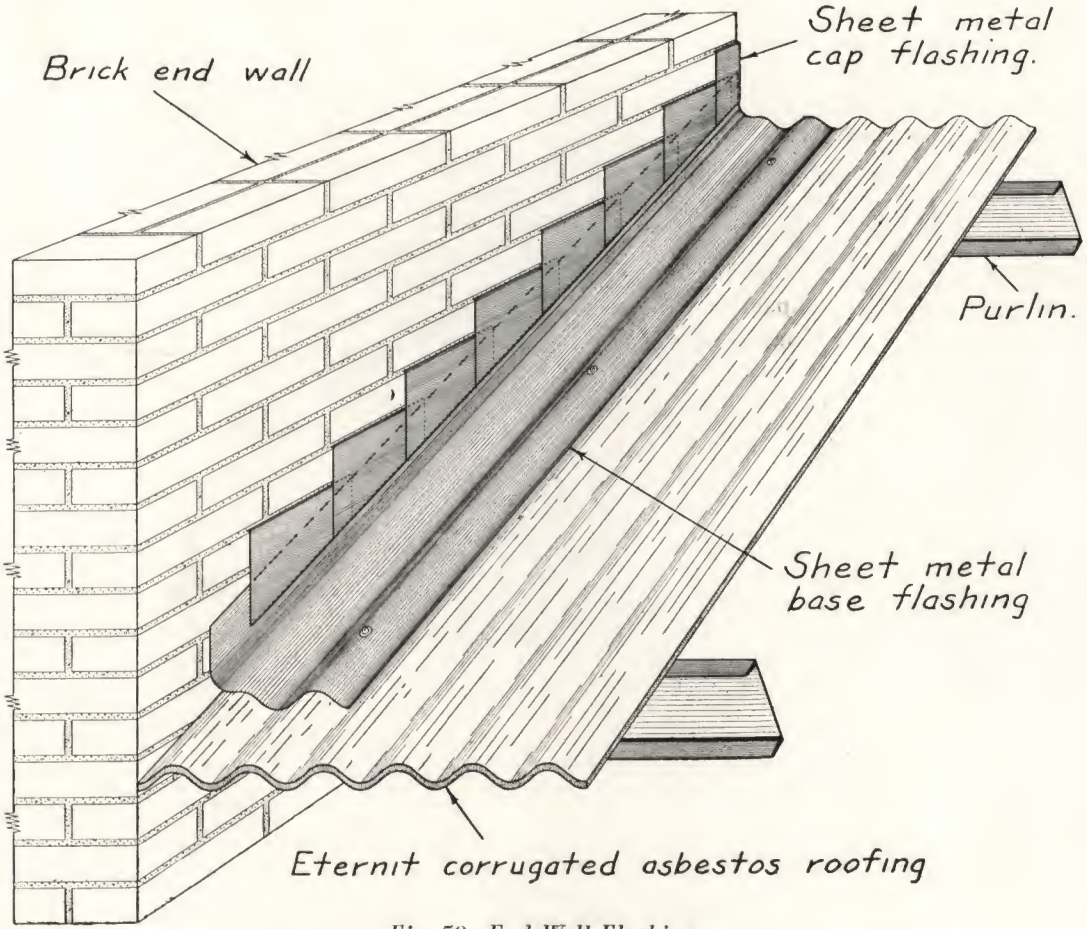


Fig. 59—End Wall Flashing

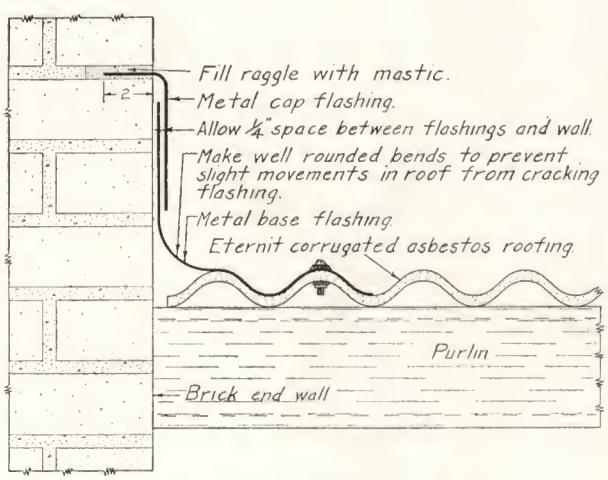


Fig. 60—Standard Detail

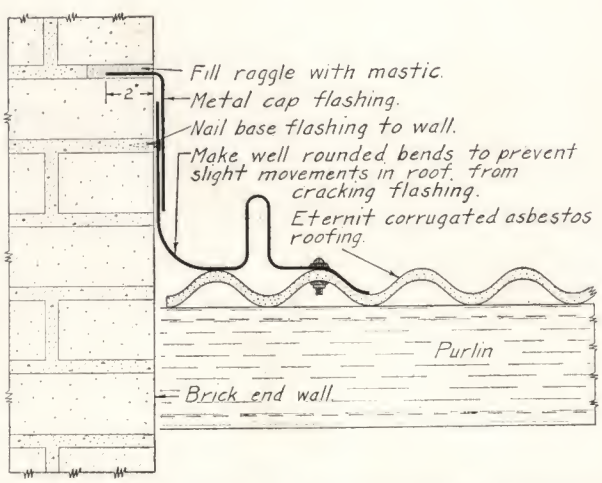


Fig. 61—Special to Allow for Expansion and Contraction

Eternit Flashing Details (cont'd)

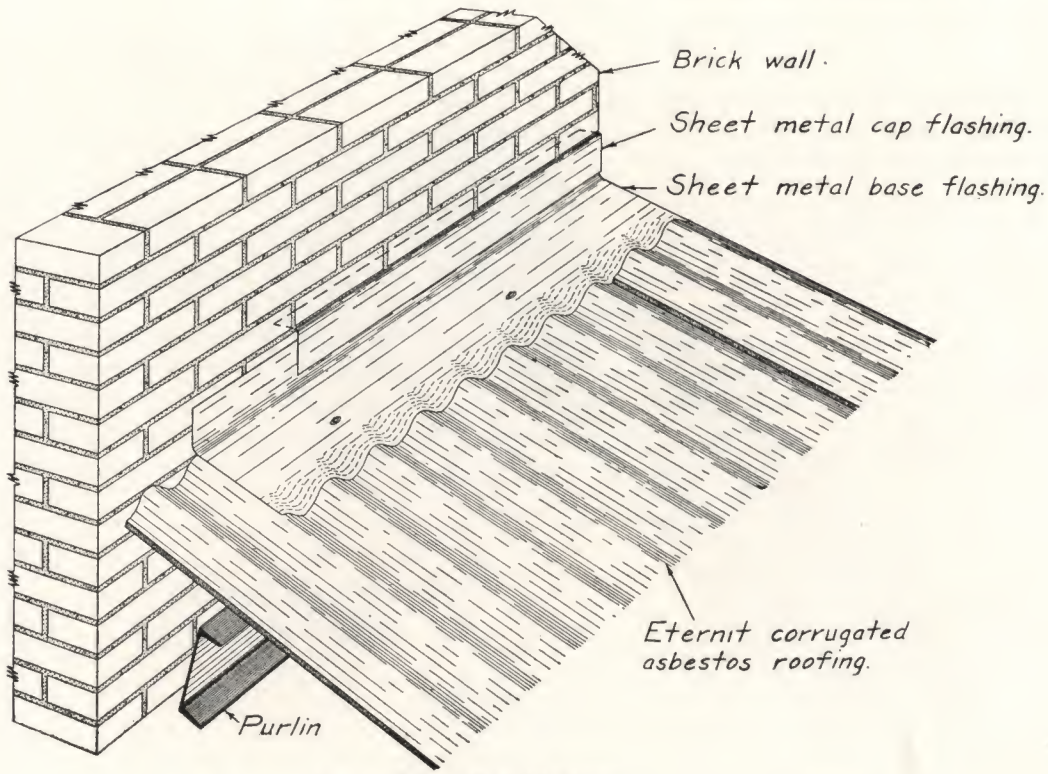


Fig. 62—Side Wall Flashing

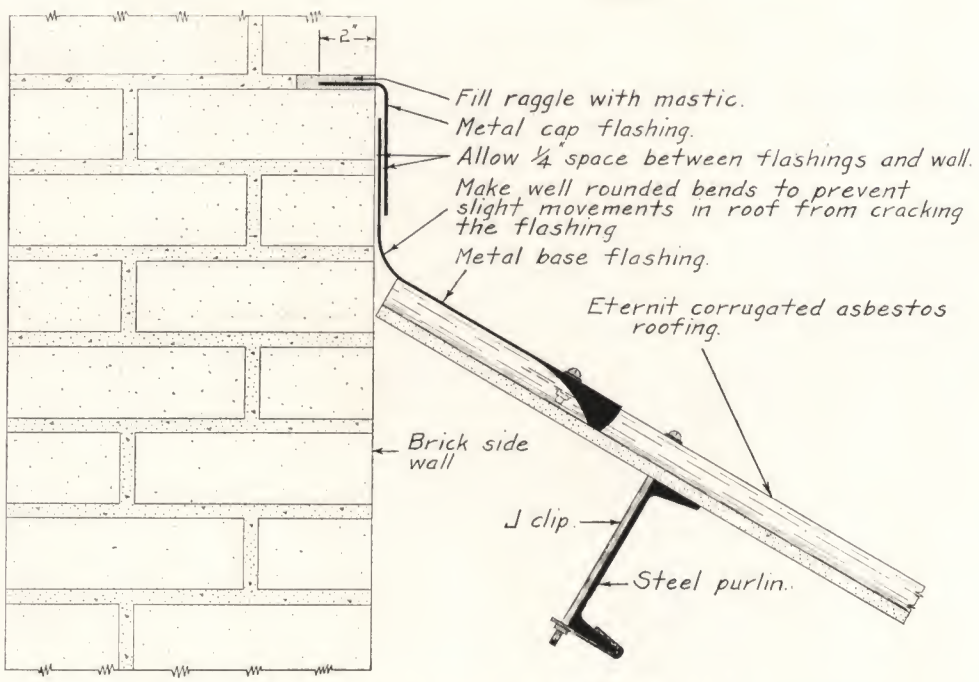


Fig. 63—Cross-Section Side Wall Flashing

Eternit Window and Door Finish

SILL, JAMB AND HEAD DETAILS:

There are various methods of flashing and finishing the junction of Corrugated Eternit asbestos siding with windows and doors. The kind and use of the building determines the selection of these details.

When weather tightness is the prime consideration, we recommend the use of lead flashing at the sills and jambs, with Ruberoid Type A filler strip at the head. The jamb flashing may be placed either on the outside or inside of the Corrugated Eternit siding sheet. The outside flashing is more economical of application. This detail is illustrated below.

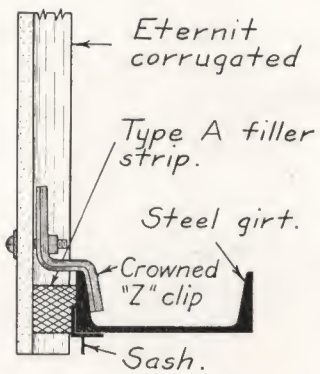


Fig. 64—Head

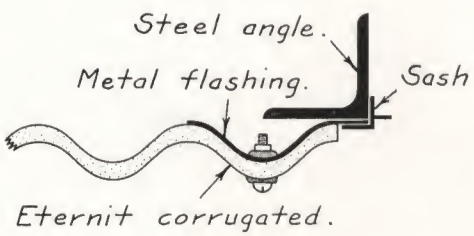


Fig. 65—Jamb

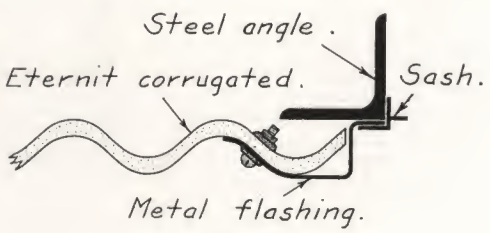


Fig. 66—Jamb

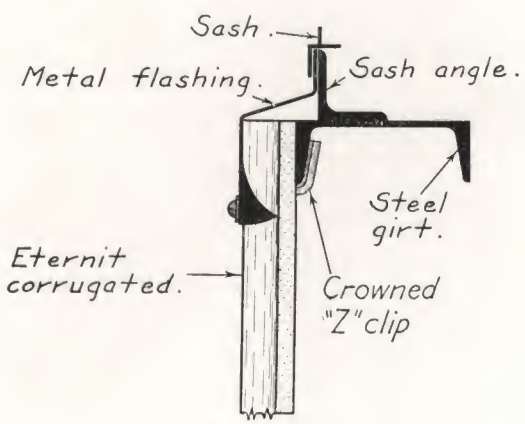


Fig. 67—Sill

Window Finish for Weather Tightness

Eternit Window and Door Finish (cont'd)

SILL, JAMB AND HEAD DETAILS (Cont'd):

An excellent design is to provide structural steel members, so as to finish the jamb and sill, Ruberoid Type A filler strip being used at the head. This method presents an attractive appearance, but requires frequent painting of the exposed steel. This design is illustrated in column one below.

When economy is the prime consideration, lead flashing may be used at the sill, and the jamb and head sealed with cement mortar, as illustrated in column two below.

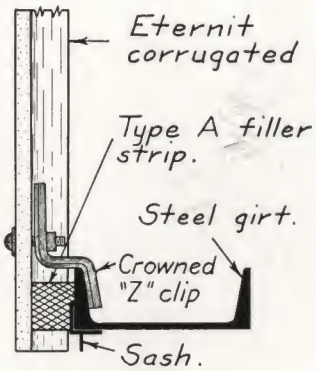


Fig. 68—Head

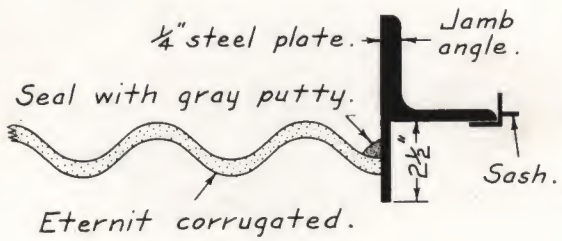


Fig. 69—Jamb

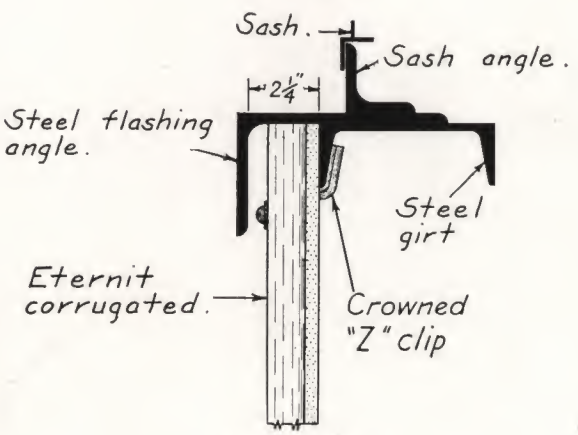


Fig. 70—Sill

Window Finish for Appearance

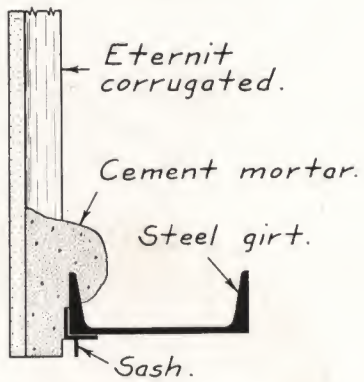


Fig. 71—Head

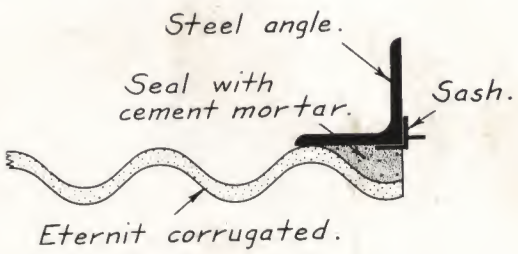


Fig. 72—Jamb

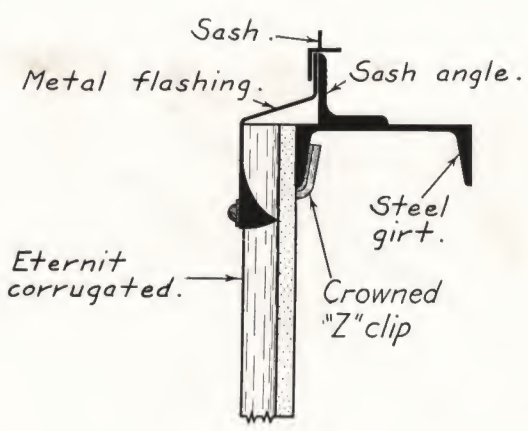


Fig. 73—Sill

Window Finish for Economy

Eternit Asbestos Louvres

Eternit asbestos louvres Type S are of the same composition as the roofing sheets. The sections are 8'-0" long, 10½" deep, 8" wide and ¼" thick. The louvres are placed on vertical and horizontal 8" centers.

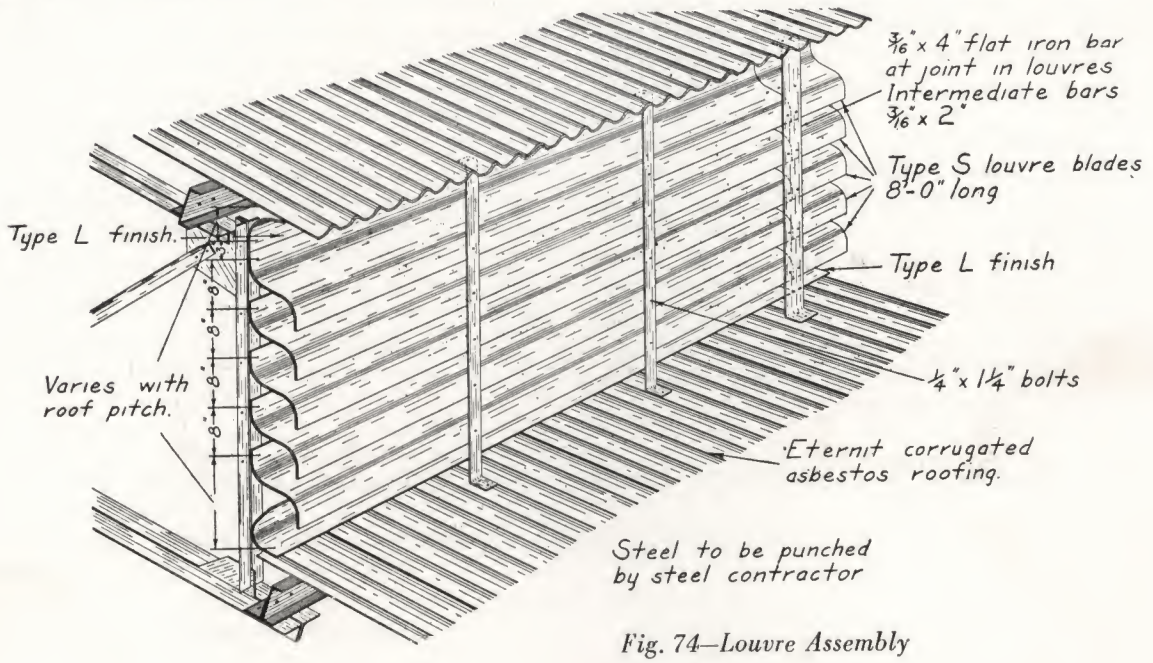


Fig. 74—Louvre Assembly

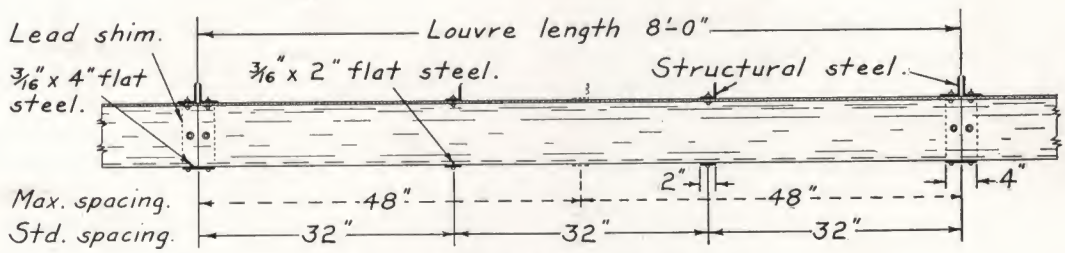


Fig. 75—Spacing of Louvre Supports

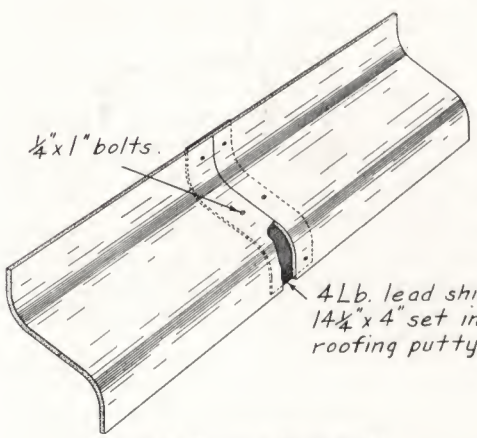


Fig. 76—Louvre Butt Joint

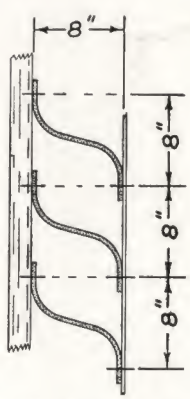


Fig. 77—Louvre Spacing

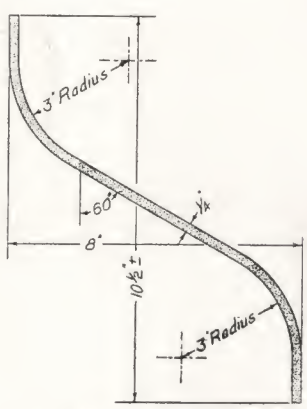


Fig. 78—Type S Louvre Blade 8'-0" Long

Specifications for Corrugated Eternit Asbestos Roofing and Siding

The roof and sides of all buildings as detailed on the drawings shall be covered with Corrugated Eternit Asbestos Sheets as manufactured by The Ruberoid Co.

The sheets shall contain only asbestos fibre and Portland cement formed under hydraulic pressure into dense tough structurally strong sheets. The top and bottom surface of the sheets shall be of the same shape so they will nest at the laps. The material shall weigh not less than 4 lbs. per square foot and have 4.2″ pitch corrugations.

The material shall be laid with a one corrugation side lap and a minimum 6″ end lap. Either the staggered joint or cut corner method of application may be used. Sheets shall be 42″ wide and of such length that all end laps will fall over structural supports. The laps of all roofing sheets shall be sealed with Ruberoid No. 343 special asbestos black roofing putty.

The ridge roll shall be of the half round type supplied with preformed corrugation closures. The ridge and corner roll shall be of the same composition as the Eternit sheets.

Standard Ruberoid fasteners are to be used throughout. All fastener heads are to be protected with Ruberoid gray asbestos roofing putty.

Ruberoid standard instructions, methods and details shall be used throughout.

All metal flashings, guttering and downspouts are to be supplied by the general sheet metal contractor.

Instructions for Corrugated Eternit Asbestos Roofing and Siding

1. *General information:* It is customary for our Engineering Department to supply complete application drawings showing the exact location of all sheets, finishing pieces and accessories. The application foreman should carefully study the location of all sheet lengths and types and plan the erection procedure before the delivery of shipment at destination. Since there are various types and lengths of sheets, it is essential that the material, when unloaded, be placed so that each item may be readily identified and selected at will. Considerable handling can be saved by stacking the sheets convenient to their location on the building.

2. *Shipment:* For carload rail movements, the corrugated sheets and finishing pieces are shipped loose, for less carload movements under ten thousand pounds of weight, the corrugated sheets and finishing pieces are shipped crated. Accessories are shipped in individual bags. Putty is sent in drums, pails or cans, depending on the quantity.

3. *Unloading:* A suitable storage space must be selected convenient to the building site but where the material will be protected from mechanical injury from trucks, cranes, tractors and like machines usually found around building sites. The Eternit sheets should be carefully unloaded and arranged in neat stacks. Only one sheet length should be placed in each pile. Since the finishing pieces are usually used last in the application, they should be stored in a safe place where they will not be disturbed until the roof and sides are covered. Due to their irregular shape, caution should be exercised in their handling and stacking. Special care should be taken to keep all materials clean and dry before erection. To avoid confusion and delay, the foreman should see that the different type fasteners are not mixed by the workmen. The different types should be kept in their individual containers until used.

4. *Pitch of Roof:* In general the minimum recommended roof pitch is 3 in 12. Roofs having less pitch should be submitted to our Engineering Department for special consideration.

5. *Types of Sheets:* When the staggered joint method of construction is used, all sheets are Type X (square corners).

When the cut corner method of construction is used, it is necessary to use Type X (square corner), Type Y (one cut corner), and Type Z (two cut corners), sheets. The exact location of the different type sheets are given on the application drawings.

Flat Sheets are often used in connection with cutting trim, etc. The standard size for Flat Eternit sheets are 4′-0″ x 8′-0″. Flat sheets or trimming cut from same should be specified of such a width and length as to cut economically from the standard size sheet. A half inch must be allowed for the saw cut.

6. *Spacing of Supports:* Roof purlin spans should not be greater than 54″ and siding girt span 66″ on centers. It is suggested that the erection foreman check and see that the steel details conform to the application drawings.

7. *Fasteners:*

(a) The shape and position of the purlins and girts determine the type of fasteners. The exact location of all fasteners is indicated on the application drawings. All

roofing and siding fasteners are placed at the crest of corrugations.

(b) *Number of Fasteners:* To properly fasten the Corrugated Eternit sheets to structural steel members, it is recommended that two clips per sheet per purlin or girt be used. This will place the fasteners on approximately 18″ centers. All drive screws used to fasten the sheets to wood frame structures are placed on approximately 12″ centers. Place one bolt in the side lap of the sheets in the center of all spans.

(c) *Corrosion Resistant Fasteners:* All Ruberoid fasteners are protected with a corrosion resisting coating. The iron bolts are cadmium plated and the clips and flat steel washers are hot dipped galvanized after fabrication. When unusual conditions require it, the fasteners may be supplied made of special metals to withstand given chemical conditions. It is recommended that the head of all fasteners on the weather side be covered with Ruberoid gray asbestos roofing putty.

(d) *Tightening of Fasteners:* It is necessary that Corrugated Eternit sheets be securely fastened to the structural steel. Caution, however, must be taken to assure that the fasteners are not drawn excessively tight. The foremen should take the proper means to assure the fasteners will be drawn snug, but not tight.

It will be found economical and rapid to tighten the fasteners with a brace, breast or yankee drill, equipped with a screwdriver bit, as illustrated.

Fig. 79
Yankee Screw Driver

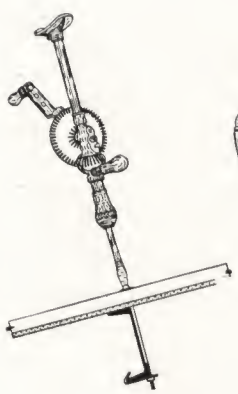


Fig. 80
Breast Screw Driver

Fig. 81
Brace Screw Driver

8. *Drilling holes in Corrugated Eternit asbestos sheets and finishing pieces:*

All fastener holes must be drilled and not punched. Holes in corrugated sheets are always drilled in the high part or crest of the corrugation. To assure proper location of the holes it is recommended that the drilling be done from the inside of the building. A very simple form of drill extension, as illustrated, may be made by drilling the proper size hole in the end of a 5/16″ rod and shrinking or brazing any standard make of twist drill 17/64″ in diameter in the hole. It may be necessary to turn down the end of the rod to fit the drill chuck.

Fig. 83
Hand Electric Drill

It is strongly recommended that all holes be made with a hand electric drill. On very small jobs, a breast drill or brace may be used.

Fig. 82—Twist Drill and Extension

9. *Cutting Corrugated Eternit Sheets and Finishing Pieces:* The Eternit materials may be readily cut with any standard make of hand saw, having 4 or 5 teeth to the inch with plenty of set. Large circular holes to permit the sheets to fit around pipes and smoke stacks, are cut by first starting the hole with a drill and finishing with a compass saw. For small, detailed fitting, a wood rasp is recommended.

On big jobs requiring large amounts of cutting a portable hand electric saw equipped with an 8″ abrasive wheel 1/8″ thick should be used.

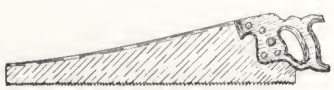


Fig. 84
Hand Saw

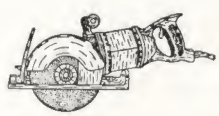


Fig. 85
Portable Hand Electric Saw

APPLICATION

1. *General:* (a) All sheets, both roofing and siding, are laid with a one corrugation side lap and a minimum 6″ end lap, the smooth side of the sheets, being exposed to the weather. The end laps of all sheets must fall over purlins and girts. The fastener bolts to pass through all sheets at the laps. The sheets are to be placed as shown on the application drawings. All side and end laps of the roofing sheets only, shall be sealed with Ruberoid No. 343 special asbestos black roofing putty laid in continuous beads, using a standard putty gun. It is essential that the sealing compound be placed exactly as detailed on the application drawings. It is of the utmost importance that the side lap putty bead be placed at the crest of the corrugation. The putty bead in the end lap should be placed as high as possible.

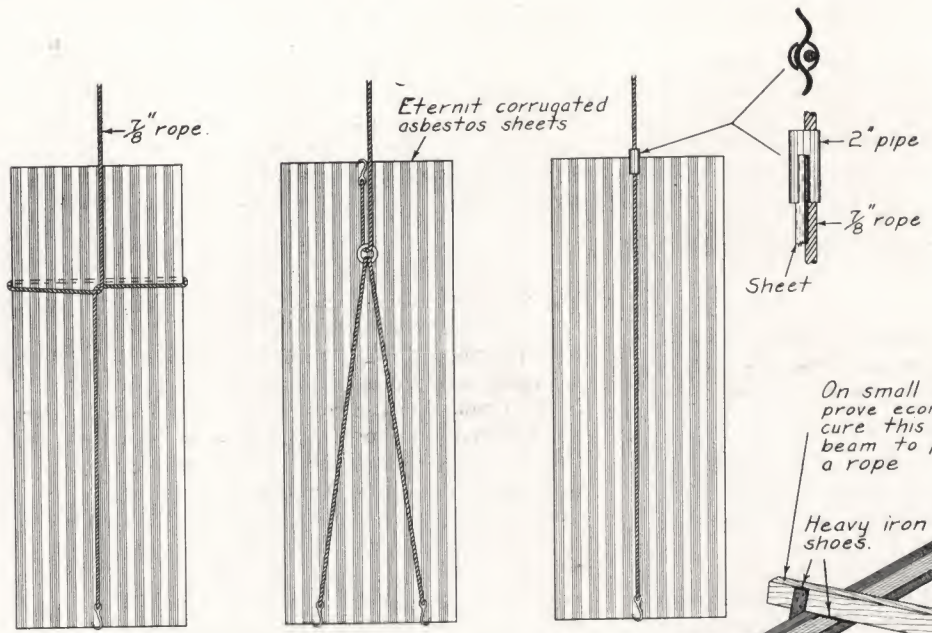


Fig. 86—Suggested Method of Slinging Sheets

(b) It is always necessary to start the application from the eaves of the building. With the staggered joint method of construction, the application may be started from either end of the building. The accepted and most economical method is to have all applications progress from the left to the right. When the material is applied by the cut corner method of construction, the sheets are always supplied with the corners mitered for left to right application unless it is specified otherwise. The cut corner sheets may also be supplied for right to left application, but after the sheets are once fabricated, the direction of the application cannot be changed, because when the direction of application is changed, the corner clipping must be opposite hand.

(c) The roofing and siding sheets are applied with the corrugations nesting. It is essential that the first few sheets be laid straight and square with the eaves and gable, as a correct start will materially assist in keeping the other sheets correctly lined up. The different courses should be laid in accordance with the details shown on the application drawing. The use of chalk lines, plumb lines and levels is recommended.

2. *Hoisting sheets:*

For the convenient hoisting of roofing sheets, an *A* frame which rests directly on the steel purlins, will be found economical. The frame is slid along the purlins as the application progresses. Hoisting the sheets through the purlins at convenient locations, will save considerable handling on the roof. The *A* frame and suggested convenient methods of slinging the sheets, are illustrated above.

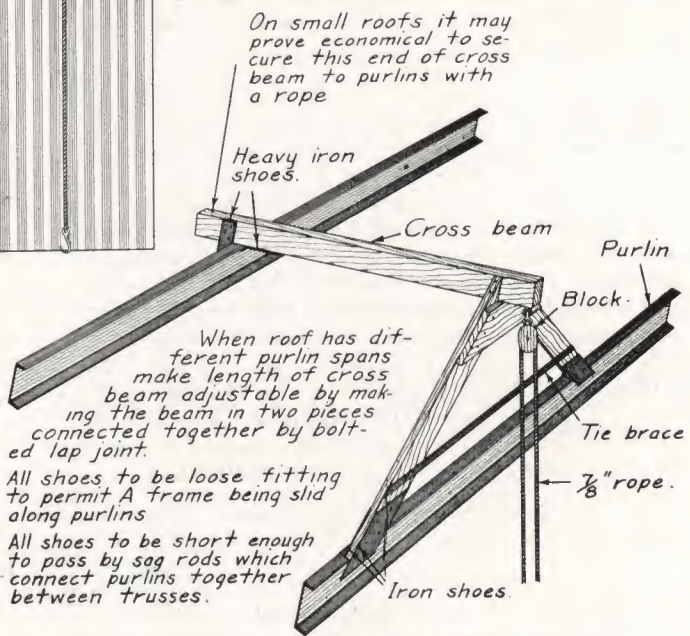


Fig. 87—Suggested A Frame for Hoisting Sheets

3. *Staggered Joint Application:* (a) The general scheme of laying the sheets with the staggered joint method of application, is to off-set each horizontal course of sheets one corrugation from the preceding course. This enables the side laps of two adjacent horizontal courses to fall side by side, making a snug butt joint. The first few sheets at the lower left or right hand edge of the roof should be applied straight and true, using a one corrugation side lap. The fasteners being inserted. Care must be taken in the drilling of all holes to make sure that they are in the correct position. A chalk line strung at the proper distance will serve as a convenient eave guide. The end of the sheets should be kept clear of the chalk line.

(b) One corrugation is cut from the side of the first sheet of the second course. This sheet is side butted with the second sheet of the first course, making the end lap as indicated on the application drawing. A few additional sheets in the second course are then applied and fastened with a one corrugation side lap, making sure that they are laid straight and true.

(c) Two corrugations are cut from the side of the first sheet of the third course. This sheet is side butted with the second sheet of the second course, making the end lap as indicated on the application drawing. A few sheets of the third course are then applied and fastened with a one corrugation side lap, making sure that they are laid straight and true.

(d) Three corrugations are cut from the side of the first sheet of the fourth course. This sheet is side butted with the second sheet of the third course. The rest of the procedure is the same as in C.

(e) The other courses are applied in the same manner as described above, increasing by one, the number of corrugations cut from the side of the first sheet for each additional course.

4. *Cut Corner Method*: (a) The result of laying the sheets with straight vertical side laps, would be to accumulate four thicknesses of sheets at each sheet corner. Due to the thickness of the sheets, this causes openings. The general scheme of the corner clip method is to miter the two opposed sheet corners, resulting in only three thicknesses of material with no openings. A few sheets of the lower course at the left hand end of the roof should be applied straight and true, using one corrugation side lap. A few fasteners should be inserted so as to hold these sheets in place. Care must be taken in the drilling of all holes to make sure that they are in the correct position. A chalk line strung at the proper distance will serve as a convenient eave guide. The end of the sheets should be kept clear of the chalk line.

The first sheet will be Type X. The succeeding sheets will be Type Y, the cut corner placed at the top.

(b) A few sheets of the second course are then applied straight and true, butting the cut corners against the cut corners of the sheets of the first course. Check the application drawings to make sure that the end lap falls relative to the steel, as indicated on the drawings, a few fasteners being inserted. The first sheet will be Type Y with the cut corner down, the succeeding sheets will be Type Z, the last sheet being Type Y with the cut corner up. The sheets are lapped one corrugation at the sides and with an end lap as specified in the application drawings.

(c) The other courses up to the ridge course are applied in the same manner as explained in "b".

(d) A few sheets of the top or ridge course should be applied, inserting a few fasteners. All of the sheets in the ridge course will be Type Y, cut corners down, except the last sheet, which is Type X. The sheets are lapped one corrugation on the sides and on the ends as illustrated in the application drawings.

(e) As explained above, a few sheets of each course have now been applied, with only a few fasteners inserted. Carefully check the material to make sure that it is applied straight and true. The correct alignment of these few sheets will materially assist in the proper placing of the roofing. All fasteners are now inserted. The application may now progress until completed, checking each sheet when applied to make sure that the side and end lap lines are kept straight and true. On small roofs requiring only one course, all sheets are Type X.

5. *Application Siding:* For the application of siding, it is necessary to have scaffolding. On low buildings, a convenient movable scaffold is made by using long boards and high wooden horses. For high siding, a swinging scaffold is recommended. The sheets must be held in place by the rope hoist until enough fasteners are inserted to support the weight of the sheet. The last illustrated sling for sheets will be found very convenient for this type of work. The rest of the procedure for the application of siding is similar to the application of roofing, which is fully covered above. It is necessary to cut the sheets on the job to fit at all windows, doors, gable ends and corners. The detail of all finishing pieces and window flashing will be fully covered by the application drawings. The usual practice is to place all finishing pieces and finish all windows as the application progresses. The siding sheets should stop 1″ from all corners to allow for correct placing of the corner roll.

6. *Application Finishing Pieces:*

(a) *Type C Ridge Roll:* Type *C* ridge roll is applied as shown on the ridge roll drawings. The sections are butted at the ends with the inside Type *C* batten flashing the joint. Ruberoid filler strips Type *R* are used to support the ridge roll and close the corrugation of the roofing sheets. The ridge roll is held in place by Type *T* ridge clip.

(b) *Type L Corner Roll:* Type *L* corner roll is applied as shown on the corner roll drawings. The sections are offset so as to permit a 4″ end lap. Corner roll is bolted directly to the siding sheets. Sometimes it is necessary to trim off some of the side of the Type *L* corner roll so that the edge will fall at the crest of the corrugation of a siding sheet.

(c) *Louvre Blades:* The louvre blades are applied as shown on the louvre blade drawings. The sections are butted at the ends, the joint being flashed with strips of 4 lb. sheet lead, set in asbestos roof putty and placed on the underside. It is necessary for the butt joints to occur at the supporting members.

(d) *Metal Flashing:* Metal flashings are applied as indicated on the flashing drawings. The kind of flashing metal used is determined by the conditions at the buildings. In most cases sheet lead is recommended.

General Information

CORRUGATED ETERNIT ASBESTOS SHEETS—

All sheets are 42″ wide and contain ten 4.2″ corrugations.

The standard lengths are from 3′-0″ to 12′-0″ in multiples of 6″.

The weight is ± 4 lbs. per sq. ft. of sheet area.

The crated weight is ± 4.8 lbs. per sq ft. of sheet area.

The thickness is ± 13/32″ at crest and vale and ± 5/16″ at flanks of corrugation.

The color is cement gray.

The over-all depth of the corrugation is 1½″.

FINISHING PIECES —

Ridge roll is supplied in half-round sections 8′-0″ long.

Ridge roll battens are 6″ long.

Ridge roll filler strips Type R are 37¾″ long.

Corner roll is supplied 8′-4″ long with offsets for a 4″ end lap and covers net 8′-0″. The legs of the section are at 90° from each other.

Louvre blades are 8′-0″ long, 8″ wide, and placed on 8″ centers.

RUBEROID FILLER STRIPS —

Filler strips which close corrugations on the top of sheets are Type B.

Filler strips which close corrugations on the bottom of sheets are Type A.

Filler strips which are used with the ridge roll are Type R.

ACCESSORIES —

All bolts are ¼″ diameter, have round heads, and are cadmium plated.

All clips are made of ⅛″ x 1″ iron stock, hot dipped galvanized after fabrication.

SPECIFICATIONS —

Sheets —

Sheets are applied directly over skeleton frame, using a 1 corrugation side lap and a 6″ minimum end lap.

Sheets shall be of such length that all end laps will fall over structural supports.

Use black sealing compound in the side and end laps of all roofing sheets only. The side and end laps of siding sheets are not sealed.

Maximum recommended purlin (roof) span is 4′-6″, and girt (siding) span is 5′-6″.

Number of fasteners —

Use 2 clip fasteners per sheet per purlin or girt.

Use 3 clip fasteners per sheet per eave strut, purlin or girt on exposed surfaces or at exposed edges with very large overhangs.

Use 3 drive screws per sheet per purlin or girt on wood structures.

Use 1 side lap bolt in the center of all spans for both roofing and siding.

All fastener holes in the sheets must be drilled and not punched.

All fastener holes must be placed in the crest of the corrugations.

The heads of all fasteners are to be sealed with Ruberoid gray asbestos roofing putty.

Pitch of Roofing —

In general, the minimum recommended roof pitch is 3 in 12. Roofs having less pitch should be submitted to our Engineering Department for special consideration.

CALCULATIONS —

Sheets —

Number of sheets per course = length of roof in feet X .3174.

Number of fasteners —

Approximate number of clips = number of sheets per course X number of purlins or girts X 2.

Approximate number of clips = number of sheets per course X number of eave struts X 3.

Approximate number of drive screws = number of sheets per course X number of wood purlins or girts X 3.

Approximate number of side lap bolts = number of sheets per course X number of spans.

Ridge Roll —

Number of pieces of ridge roll = length of roof X .125.

Number of pieces of ridge roll battens = number of pieces of ridge roll —1.

Number of ridge roll filler strips Type R = number of corrugated sheets per course X 2.

Number of ridge clips and 5″ bolts = number of ridge rolls X 5.

Number of 1½″ bolts = number of battens X 2.

Corner Roll —

Number of pieces of corner roll = length of corner X .125.

Number of 2½″ bolts = number of pieces of corner roll X 10.

Some
RU-BER-OID
Building Products

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Shingles and Sidings of Asphalt and Asbestos-Cement

Roll Roofing of Asphalt Rag-Felt and Asbestos Base

Built-up Roofings and Waterproofing Materials of Asphalt and Coal-Tar Pitch

Building Boards of Asbestos-Cement in Flat, Corrugated and Decorated Forms

Building and Packing Papers

Asbestos Fibres — Chrysotile Asbestos in Various Grades

Paving Materials — Road Tars and Pitches

Felts — Rag-felts for Roofing Products and Felt-base floorings; Deadening Felts and Carpet Linings; Linoleum Felts; Acoustical Felts for Automobiles and Insulating Felts for Buildings

Asbestos Papers, Boards, and Pipe Covernings

Insulation Materials of Magnesia, Rock Wool, and Asbestos

Paints, Roof Coating, and Plastic Cements